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Table of Contents

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ORIGINAL ARTICLES— PAGE.
The Jackson Lecture: "The Makings of Obstetrics", by FELIX MEYER, M.D., B.S., F.R.A.C.S. .. 75
"The Pituitary Gland and its Syndromes", by FRANK BEARE, M.D., M.R.C.P., D.P.M. 85

REPORTS OF CASES—
"Intramuscular Injection of Liver Extract", by T. M. GREENAWAY, M.B., Ch.M. 91

REVIEWS—
Materia Medica of Proprietary Preparations .. 92
Marriage 92

LEADING ARTICLES—
The Vitamin Content of Australian and New Zealand Butter 93

CURRENT COMMENT—
Oleothorax and Other Methods of Lung Collapse Therapy 94
Tumour of the Islands of Langerhans 95

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—
Radiology 96
Physical Therapy 97

SPECIAL ARTICLES ON TREATMENT— PAGE.
The Treatment of Asthma 98

BRITISH MEDICAL ASSOCIATION NEWS—
Scientific 99
Portrait of Dr. C. H. Mollison 100

CORRESPONDENCE—
An Interesting Eye Condition 100
Travelling Fees Charged by Medical Practitioners 101
Anæsthesia from the General Practitioner's Point of View 101
An Economic Commentary and Diagnosis 101

OBITUARY—
Patrick Blackall 102

CORRIGENDUM 102

BOOKS RECEIVED 102

DIARY FOR THE MONTH 102

MEDICAL APPOINTMENTS VACANT, ETC. 102

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 102

EDITORIAL NOTICES 102

The Jackson Lecture.[1]

THE MAKINGS OF OBSTETRICS.

By FELIX MEYER, M.D., B.S., F.R.A.C.S.,
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IN the dedication of his great work to Henry the Third, the most Christian King of France and Poland, Ambroise Paré, whom Smellie calls "the famous restorer and improver of midwifery", writes as follows:

> For God is my witness and all good men know that I have now laboured fifty years with all care and pains in the illustration and amplification of Chirurgery: and that I have so certainly touched the mark whereat I aimed that Antiquity may seem to have nothing wherein it may exceed us beside the glory of invention, nor posterity anything left but a certain small hope to add some things, as it is easie to add to former inventions.

In that challenge to posterity, so frankly uncompromising in its attitude, we may read Paré's estimate of the position in which he found and left surgery and obstetrics. Today, three and a half centuries later, by the light of advanced medical science, we have a truer perspective of the picture as it appeared to Paré in 1579.

The centuries which went to his making are as much a part of the history of obstetrics as are the last fifty years. The story up to his time is full of interruptions and setbacks; thence onward it is to have a practically unbroken continuity.

With primeval woman we may assume that labour was natural—normal in the fullest sense—the harmonious working of a machine, anatomically and physiologically perfect. We can imagine the mother, animal-like, gnawing through the umbilical cord, or severing it with a palæolithic flint or a shell. Labour was then more than now an effort of Nature protected by Providence.

The first law of her being, the instinct of self-preservation, would suggest to the woman in labour natural aids of posture and pressure, and where these

[1] Delivered at Brisbane.

did not suffice, there would be other help from her sympathetic tribeswomen—a crude technique, but the beginnings of an art, and in various ways common sense.

FIGURE I.
Funeral urn representing a delivery amongst the ancient Peruvians.

In the absence of record, we must look for some idea of prehistoric midwifery to its practice among existing races untouched, or as little untouched as possible, by civilization. First-hand accounts of their methods reveal many quaint and practical usages, which it is reasonable to suppose are direct or modified forms of tribal heritage.

As the result of his exhaustive study of labour among primitive peoples, Engelmann has come to the conclusion that obstetric art as it existed before the time of the Pharaohs, and previous to the time of Greek civilization, is faithfully preserved among races and people of a more primitive civilization. Even if one cannot unreservedly accept his belief that such primitive obstetrics, as practised by certain peoples such as the North American Indians and the negroes of Africa fifty years ago, actually represents what it was in Egypt before the times of the earliest papyrus or in Greece before the time of Homer, one

FIGURE II.
Ancient stone carving, showing a woman in labour, while nursing her previous baby.

realizes that he has gone as far as it is possible to go in giving a convincing picture of the management of childbirth in prehistoric times. An inquiry into the conditions of childbirth among uncivilized or inferior races would carry us very far afield, but Engelmann has shown that the empirical or natural obstetrics that still survives among tribes or peoples dependent on their own resources—an increasingly diminishing number—includes a great variety of mechanical and medicinal measures to meet the difficulties and dangers of parturition. The mechanical devices to make labour more speedy and less painful are mainly of a *vis a tergo* nature, such as changes of posture, swinging by the limb of a tree, powerful massage, simple expression, either by the encircling arms of an assistant or the patient's hand pressing on her abdomen.

Labour is the result of the child's desire to escape from its "confinement". A difficult labour meant a child of evil disposition, a justification for its destruction by efforts at expression, or later by embryotomy, death being deserved by the perverse child and by the mother for carrying it. The placenta was expressed by the patient or an assistant, or the cord was tied to the patient's toe, gradual extension being made by the legs; and contraction of the uterus after the expulsion of the placenta was effected by kneading or spraying of the abdomen with water, squirted through the teeth, or poured from a jug. Finally, the mother cleansed herself by plunging into the stream or lake near by. More than forty years ago, while resident medical officer at the Melbourne Lying-in Hospital, while on a holiday in New Zealand, I learnt that in the Hot Lake District (North Island) the Maori woman had her solitary confinement in a *whare* or hut near a warm spring. After delivery, she took her babe along with her for a bath in the pool. She was *tapu*—no one could go near her for a day or two.

Among Australian aborigines, obstetric practice varies with tribes. As a rule, the woman isolates herself from the camp, her husband, a gin or an old man being allowed to be with her.

In one Queensland tribe the woman lies on the ground upon her back with open thighs and drawn-up knees, the old gin holding her down by the neck and head. The cord is cut and tied with opossum string.

In another tribe the patient squats on her shins and knees over a shallow hole in the sand, and during labour throws her body backwards or forwards so as to rest on her hands, or grasps an overhanging branch. The genital parts are never touched by anyone, and the child is allowed to fall into the hole. Its face and mouth are cleaned of sand, but it is never washed.

More than fifty years ago, Mr. Robert W. Felkin, F.R.S.E., F.R.G.S., who had two years of medical study, contributed a paper to the Edinburgh Obstetrical Society on his experiences for more than three years among the natives of Africa generally and Central Africa especially, with reference to their childbirth practice. His description of a Cæsarean section he witnessed deserves quoting in full.

So far as I know Uganda is the only country in Central Africa where abdominal section is practised with the hope of saving both mother and child. The operation is performed by men, and is sometimes successful; at any rate, one case came under my

observation in which both survived. It was performed in 1879 at Kahura.

The patient was a fine healthy-looking young woman of about twenty years of age. This was her first pregnancy. I was not permitted to examine her, and only entered the hut just as the operation was about to begin. The woman lay upon an inclined bed, the head of which was placed against the side of the hut. She was liberally supplied with banana wine, and was in a state of semi-intoxication. She was perfectly naked. A band of *mbugu* or bark cloth fastened her thorax to the bed, another band of cloth fastened down her thighs, and a man held her ankles. Another man, standing on her right side, steadied her abdomen. The operator stood, as I entered the hut, on her left side, holding his knife aloft with his right hand, and muttering an incantation. This being done, he washed his hands and the patient's abdomen, first with banana wine and then with water. Then, having uttered a shrill cry, which was taken up by a small crowd assembled outside the hut, he proceeded to make a rapid cut in the middle line, commencing a little above the pubes, and ending just below the umbilicus. The whole abdominal wall and part of the uterine wall were severed by this incision, and the *liquor amnii* escaped; a few bleeding-points in the abdominal wall were touched with a red-hot iron by an assistant.

The operator next rapidly finished the incision in the uterine wall; his assistant held the abdominal walls apart with both hands, and as soon as the uterine wall was divided he hooked it up also with two fingers. The child was next rapidly removed, and given to another assistant after the cord had been cut, and then the operator, dropping his knife, seized the contracting uterus with both hands, and gave it a squeeze or two. He next put his right hand into the uterine cavity through the incision, and with two or three fingers dilated the *cervix uteri* from within outwards. He then cleared the uterus of clots and the placenta, which had by this time become detached, removing it through the abdominal wound. His assistant endeavoured, but not very successfully, to prevent the escape of the intestines through the wound. The red-hot iron was next used to check some further hæmorrhage from the abdominal wound, but I noticed that it was very sparingly applied. All this time the chief "surgeon" was keeping up firm pressure on the uterus, which he continued to do till it was firmly contracted. No sutures were put into the uterine wall. The assistant who had held the abdominal walls now slipped his hands to each extremity of the wound, and a porous grass mat was placed over the wound and secured there. The bands which fastened the woman down were cut, and she was gently turned to the edge of the bed, and then over into the arms of assistants, so that the fluid in the abdominal cavity could drain away on to the floor. She was then replaced in her former position, and the mat having been removed, the edges of the wound (that is, the peritoneum) were brought into close apposition, seven thin iron spikes, well polished, like acupressure needles, being used for the purpose, and fastened by string made from bark cloth. A paste prepared by chewing two different roots and spitting the pulp into a bowl was then thickly plastered over the wound, a banana leaf warmed over the fire being placed on top of that, and, finally, a firm bandage of *mbugu* cloth completed the operation.

Until the pins were placed in position the patient had uttered no cry, and an hour after the operation she appeared to be quite comfortable. Her temperature, as far as I know, never rose above 99·6° F., except on the second night after the operation, when it was 101° F., her pulse being 108.

With more advanced peoples the simpler intuitive practice gives place to more harmful measures, especially in the treatment of the third stage, such as strong traction on the cord or leaving the placenta to decompose. In some cases the fœtus is expressed by a weight placed on the abdomen, or by the feet of an assistant, who tramples on the back or belly of the patient. The primitive method of delivery with the patient seated or squatting on a mound of earth or sand, or supported in the lap of a tribeswoman or husband, gives place to the obstetric chair, a crude wooden form.

The means of assisting Nature vary with peoples and are as uncouth as endless. In Mexico and Southern India the woman is shaken several times to promote delivery, but if that does not answer, she is rolled on the ground or suspended by the feet and shaken. The Esthonians suspend and shake the patient vigorously if labour is retarded. In Syria the patient is given twenty-four hours for her labour; if undelivered, four male or female friends pack her in a blanket, roll her about and bounce her up and down to facilitate delivery.

One could fill pages with these adventures in quest of eutocia.

Side by side with this primitive obstetrics—whatever form it may have taken—in the hands of tribal midwives, the medicine man of the tribe was developing his rôle of priest-physician, assisting at difficult labour with his specially devised therapeusis, which in its earliest forms would combine appeal to his gods, incantations, exorcism of evil spirits, magic, and medicaments, the latter for the most part nauseating. To understand the development of obstetrics as an art, it must be remembered that from the very beginning medical practice was in the hands of the priests and that their increasing knowledge and influence were reflected in the better understanding and management of childbirth. Originally consultants in difficult labour only, they became, in course of time, an authoritative board of advice.

To say so much is to indicate in briefest fashion a process of immeasurable time. We are on sure grounds when we reach historical records. From a papyrus dating back to 1500 B.C., and from the *Ayur Veda*, or Book of Life (probably 1500 B.C.) and from other sources, we realize the progress made by the obstetrical art in the early civilizations of Egypt, India and Greece. The primitive method merged into one over which religion with its priestly teachings exercised an increasing influence, which, valuable in many respects both as to precept and practice, was not favourable to scientific development.

The priestly influence is largely in evidence throughout the long period which led up to the dawn of scientific medicine. One of the most marked features of this priestly teaching was the insistence on scrupulous cleanliness in connexion with women in childbirth. What was a primitive instinct for keeping the body pure, an instinct that survives among semi-civilized peoples, became a ritual, rationalized by experience into a system. Thus in the *Ayur Veda*, mentioned before, we learn that in the period of Brahminism women of high caste were confined in separate rooms. Isolation was a regular practice. This passion for cleanliness was especially marked in the care of child-bearing women among the Jews. A great health officer like Moses learnt much from the Egyptians: the Mosaic code was as much a system of hygiene as it was a religious and ethical discipline.

Jewish medicine is based on Egyptian and Greek doctrine, and embryology and obstetrics have a more prominent place in early Hebrew literature, more particularly in the Talmud (450 B.C. to A.D. 500), than any other medical subject. Thus of the *fœtus in utero* we read that:

It floateth like a nut-shell on the waters and moveth hither and thither at every touch.

The child at full term is graphically described.

The babe in its mother's womb is like unto a rolled-up scroll with folded arms, it lieth closely pressed together, its elbows resting on its hips, its heels against its buttocks, its head between its knees. Its mouth is closed, its navel open. It eats its mother's food and sips its mother's drink, but it does not excrete for fear of hurting. Now when the time hath come that which is closed is ope'd, and what was open, closeth, behold the child is born. (Niddah 30 B.)

The course of normal labour seems to have been an easier one among the ancient Hebrews than nowadays.

Ere the midwife cometh in unto them, they are delivered. (Exodus I : 19.)

Severe labour pains were regarded as signs of divine wrath and punishment, and the prophets often employ this figure of speech in their utterances.

Four cases of dystocia or difficult labour are mentioned in the Bible. The first is that of Rebecca giving birth to her twins (Genesis XXV : 24). The second is that of Thamar (Genesis XXXVIII : 27), also giving birth to twins. The third is the birth of Benjamin, with the death of Rachel, the first case of fatal labour on record.

And Rachel travailed and she had hard labour and it came to pass when she was in hard labour that the midwife said unto her, "Fear not, thou shalt have this son also". And it came to pass as her soul was in departing, for she died, and she called his name Benoni.

The fact that the midwife could declare the sex before the child was born suggests a breech presentation.

The fourth is the case of the wife of Phineas (Samuel I, IV : 19), of which we read :

And his daughter-in-law, the wife of Phineas, was with child, near to be delivered : and when she heard the tidings concerning that the ark of God had been taken, and that her father-in-law and her husband were dead, she sank down and gave birth for her pain came suddenly upon her.

This may have been a case of hæmorrhage from shock.

Women in labour were attended by midwives called "meyaldoth" or birth-helpers, "chachomoth" or wise women and "chayoth" or life-bringers. Physicians assisting in confinements are not mentioned in the Bible, but are referred to in the Talmud. The birth took place on a special kind of couch or stool, the "mashber," the midwife delivered the child and cut the cord, bathed the infant (Ezekiel XVI : 4), rubbed it with salt, and wrapped it in swaddling clothes (Job XXXVIII : 9). Ezekiel's time would be about 600 B.C., two hundred years before Hippocrates. Galen, centuries later, advises rubbing a little salt on the newborn child to render the skin thicker and more solid.

In case of asphyxiation, the Talmud recommends stroking the cord gently towards the infant before cutting it, and in extreme cases trying resuscitation by direct inflation of the infant's lungs (Sabbath 130-150). Multiple pregnancies are frequently mentioned, twins were common, and in Egypt we are told the Hebrew women gave birth to sextuplets (Midrash, Shemoth and Rasha, Exodus I : 7).

Quite a number of malformations and monstrosities are mentioned. We read of a fœtus with a human face and an animal body, a monster with a single eye and various forms of hermaphrodites. Some obscure passages suggest hydatidiform mole, and there are certainly references to extra-uterine pregnancy. Three kinds of operations are mentioned in the Talmud. The first was a destructive one, embryotomy, which consisted in the cutting up of the dead fœtus and extracting it piecemeal. The other two aimed at the saving of both mother and child. One was called *Karuvgath habbeter* or the cutting open of the abdomen, and was nothing more or less than the classical Cæsarean section. The other operation, called *Yozay dofan*, or delivery through the side, also aimed at the saving of both mother and child, but the exact character is a matter of dispute among Hebrew archæologists.

The tale then, so far as it has been told, is that of the gradual development of a primitive practice into something more regularized and made more effective as an art by simple mechanical aids, benefiting by increasing medical knowledge, but remaining surgical. But although during this long period of religious influence obstetrics as an art attained a high degree of perfection, it is not until the time of Hippocrates that we have evidence of a profound intellect with a scientific spirit at work in the study of the phenomena of parturition.

In freeing medicine from the bonds of tradition and superstition, in divorcing it from religion and philosophy and widening the cleavage already begun between temple-practice and medicine proper, Hippocrates laid the foundation of scientific medicine. But it would be a mistake to suppose that his reforms were immediate and abiding. The rôle of the priest-physician, so long sacrosanct, was a deep-rooted and cherished institution, and there was always the appeal to the tutelary deities of childbirth. The women of old Egypt prayed to the goddess Thuseris, the protectress of childbirth. They wore small amulets of baked clay, with the figure of the pregnant goddess, half woman, half hippopotamus, with large pendulous abdomen and four pendulous breasts. (See Figure III.)

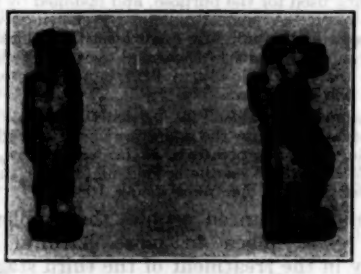


FIGURE III.
Egyptian amulet, goddess Thuseris, from a tomb near Thebes.

The women of Greece prayed to the presiding goddess, Ειλείθυια as did her Roman sisters to Lucina, and the three Dii Nixi, and centuries later "wives still pray to Juno for boys with hearts as bold as his who kept the bridge so well in the brave days of old". The idea among primitives that evil spirits in the mother's body affected childbirth may or may not have been fostered by the priests. In the early days of the Roman Republic, certain people ran through

the streets of Rome, lightly striking the abdomens of pregnant women with whips, with thongs made of goat skin, to frighten away the evil genii of difficult labour. A variant of ante-natal care! Where divine aid was sought, goddesses were appealed to; only where graver interference was needed was the appeal made to gods and men, as when Apollo is said to have rescued the infant Æsculapius from

FIGURE IV.
Votive offerings of terra cotta representing the uterus, one of them having an ovary attached. Rome (after Curatola).

death by performing Cæsarean section on the dying Semele. But under the teachings of Hippocrates, the priestly influence waned, and the temple gradually ceased to be the school of obstetrics.

And in any case the evolution of obstetrics as an art was necessarily slow. The care of childbirth was in the hands of women, either the attendant or maia (mother) or the maiutria (the professional midwife).

The midwives were spoken of as navel cutters, ὀμφαλότομοι. A woman, like the mother of Socrates, had charge of parturient women. They were not allowed to practise unless they had had children and had reached the menopause. An early Athenian law prohibited them from practising physic, thus depriving them of any opportunity of advancing their art. They had their Sairey Gamps, who practised abortion, and did a little treatment on the sly.

Again, the spirit of the times and the feelings of women themselves were opposed to close examination of the living woman. Dissection of the dead body was forbidden, anatomy was restricted to a study of the surface of the body, physiology was elementary, and pathology a medley of fantastical theories.

The question of individual authorship of the Hippocratic writings need not detain us here. Some are undoubtedly the work of Hippocrates himself, others are as certainly the work of those who preceded or immediately followed him. They may be accepted as representing medical doctrine in Greece in the sixth, fifth and fourth centuries B.C., up to the golden age of Pericles, that wonderful period of Greek art, literature, philosophy, oratory. In two works regarded as genuinely his, *De Morbis Mulierum* and *De Superfoetatione*, are to be found most of the obstetric teachings of his day. The care of childbirth was in the hands of midwives, cephalic presentations alone being regarded as natural or hopeful. "When the child lies across or presents by the feet, the woman cannot be delivered." In faulty head presentations, a crude cephalic version is advised by pressure or by drugs which caused sneezing or vomiting. Podalic version was unknown.

The physician spoken of as man-grandmother (maieuta) was called in for the delivery of the dead child by embryotomy, or for the expulsion of a retained placenta, as often as not by traction on the cord. Hippocrates describes three instruments: μαχαίριον (machairion), knife or perforator for opening the head; πιέστρον (piestron), comminutor for breaking up the bones; ἑλκυστηρ (helkuster), extractor for hooking out the fœtus. Women were delivered in bed, or on an obstetric chair. An article in the Hippocratic collection deals with labour in the seventh and eighth months, giving the more favourable prognosis for the child at the former stage, an idea which is still to be met with. I well remember being told this in my student days by the midwife of the Lying-in Hospital, as the Melbourne Hospital for Women was then called. This tradition, apparently accepted by Hippocrates, was founded on the belief that the leapings of the *fœtus in utero* were a factor in delivery. If these embryonic acrobatics started at the seventh month with no result, the effort was considered to have so weakened the child that it had no chance of survival if born a month later.

The rôle of the surgeon-accoucheur was a very limited one, a last aid, associated in the mind of the woman with the destruction of the fœtus and the risks of traction on the cord. Fatalities must have been frequent and ἰατροφοβία (iatrophobia), the fear of the physician, would in consequence centre the management of labour more and more in the hands of the midwife.

Hippocrates compared the child in the uterus to an olive in the neck of an oil bottle, and demonstrated clearly that it could in its long diameter easily pass through, but he adds: "If the long diameter of this oval body be thrown across, either the bottle will break, or the olive will be crushed." On such an assumption, operative midwifery would have had, as one of its chief aims, the conversion of a breech or footling and transverse presentation into a head presentation. With podalic version unknown and cephalic version impossible, the results must have been rather terrible.

This fundamental error of Hippocrates, though later corrected by Aristotle and Celsus, established a rule of practice which persisted for something like two thousand years.

Considerable knowledge of ante-natal pathology is shown by the Hippocratic writers. Congenital dislocations are accurately described and there are references to double monsters and mono-chorionic twins. Morbid states of the fœtal adnexa and their influence on the fœtus were recognized, as well as the factors in their production, for example, maternal traumatism. The Greek mind was impressed with the influence of maternal ante-natal impressions on the fœtus and encouraged pregnant women to walk in the groves and take in the glories of temple and statue in the hope that beauty born of vision might pass into the form and face of the babe.

Despite his superficial anatomical knowledge and his ignorance of pelvic anatomy, Hippocrates advanced obstetric art to a high degree of efficiency. Behind the shadows of these and other disabilities is seen the master-mind, the keen observer and recorder of phenomena—a great inductive intellect lit with humanity. Dealing with pregnancy, he says

that when women are with child the mouth of the womb is shut. When there is a copious discharge of blood before labour, there is a risk that the child will be dead or at least non-viable. He discusses abortion very fully, emphasizing its dangers. With regard to retention of the placenta, he remarks that if it is not cast off it becomes putrid, and thus comes away on the sixth or seventh day or later. To procure the expulsion of the secundines, apply a sternutatory and shut the nostrils and the mouth; and he prescribes southernwood, dittany, the flowers of the white violet, and asafœtida. For hæmorrhage, he advises raising the foot of the bed.

His clinical records of fever following miscarriage and delivery at term are admirable in their minuteness of detail and accuracy of description.

Though he does not use our terms sapræmia or septicæmia, he has evidently an insight into their causation. He is a close observer of the neuroses of pregnancy and gives a clear description of puerperal mania. Intrauterine injections and fumigations figure in his treatment.

In that remarkable work which has come down to us with the Hippocratic writings under the title of "The Aphorisms"—a collection of terse pronouncements of medical and allied subjects—there is much matter valuable as regards diagnosis, prognosis and treatment, and much that is of little value. Of the thirty-five aphorisms dealing with diseases of women and childbirth, some may be ascribed to Hippocrates. Here are three which, one would hesitate to say, reflect his mind:

1. Women who are very lean have miscarriages when they prove with child, until they get into better condition.
2. A woman with child, if it be a male, has a good colour, but if a female, she has a bad colour. (Paré accepts this.)
3. The male fœtus is usually seated in the right and the female in the left side.

There is no evidence that Hippocrates was a practising obstetrician. He was well acquainted with the prevailing ideas, and he availed himself of the opportunities for the study of the art. Great humanitarian and profound thinker that he was, he brought a critical faculty to bear on the teachings current in his day, and lifted obstetrics out of much of the false traditional doctrine under which it lay.

As regards the practice of abortion, the general opinion among the ancients seems to have been that the infant was but a part of the mother, and that she had the same right to destroy it as to cauterize a tumour upon her body. Deliberate induction of abortion and infanticide prevailed among the ancient Persians, Carthagenians, Arabs and Phœnicians till early in the Christian era. The Israelites furnished an exception, and in addition they were opposed to contraception. In the code of Hammurabi, 2500 B.C., in the Assyro-Babylonian period, an attack on a pregnant woman, causing miscarriage, was punishable with a fine of ten silver shekels. In Exodus (XXI, 22) a similar law is stated, the judge to determine the fine. Plato and Aristotle both admitted the practice of abortion. The Roman law contained no enactment against voluntary abortion till the time of Ulpian. Hippocrates was wholly opposed to it. "I will not give a pessary to a woman to procure abortion" is part of the Hippocratic oath.

After the Macedonian conquest of Greece and the death of Aristotle, Greek medicine shifted from Athens as a centre to Alexandria, whither, under the Ptolemies, were attracted men of science, art and literature. Here was established the first great medical school of antiquity, with its museum, its magnificent library of half a million volumes, its laboratories and clinics. Dissection of the human body was no longer disallowed, and even vivisection on criminals is said to have been permitted. Two names stand out as those of anatomists and obstetricians, Hierophilus and Erasistratus. The former is associated with the *torcular herophili* and the duodenum; his dissections of the female pelvis and genital system were a distinct gain to obstetrics. With these names must be joined Demetrius, who regarded foot presentations as giving a good prognosis second only to head presentations—a rather important advance.

With the rise of Roman civilization Rome became a centre of medicine and general culture, and men of learning were attracted from the East by the encouragement given to science and the liberal arts. The teachings of Hippocrates brought to Rome by Greek physicians after the short-lived ascendancy of the Alexandrian School, were carried on by Celsus (30 B.C. to A.D. 14), Soranus (under Trajan, A.D. 98 to 117) and Galen (A.D. 131).

Celsus recognized head, breech and shoulder presentations, and recommended podalic version by the surgeon, but only with a dead fœtus. He described the sharp hook for its extraction, and various embryotomy instruments.

But it is Soranus who must be credited with being the first to teach podalic version on the living child, and with having advanced obstetric art to its greatest height since the time of Hippocrates, a height from which it was subsequently to fall, and not to be regained till the time of Paré, nearly fifteen centuries later.

In the Inaugural Dissertation of Paul Goerlitz, Berlin, 1873, the work of Soranus is well analyzed, and he is given precedence over all ancient writers for the following reasons:

(1) His fair, generally correct, knowledge of the female sexual organs, the separation of the uterus and vagina.

(2) He anatomically defined the positions of the child.

(3) He taught that Nature completes normal head and foot presentations, and that breech, knee, and incomplete foot presentations must be converted into complete foot presentations. (All previous writers considered only cephalic presentations as normal.)

(4) He defines the causes of dystocia well.

(5) He defines clearly the indications for operative interference. He gives excellent advice as to the position to be occupied by the parturient, in simple cases on the obstetric chair or in the lap of an assistant in difficult cases, the recumbent position in bed. Expression by pressure on the abdomen is

recommended, and dilatation of the os if needed. Most important are the rules laid down for the hastening of labour or the improvement in the presentation or position of the child by change of posture; the conditions under which the kneeling, the dorsal, or the inclined, or the right or left recumbent position is to be assumed, are precisely indicated.

(6) Great stress is laid on internal examination, which is recommended for the detection of malposition and the progress of labour. The operations described are podalic and cephalic version, extraction by the feet, changing of imperfect to perfect foot presentations, cephalotripsy, embryotomy and even the *accouchement forcé*. He describes no less than seven instruments for use in embryotomy: (i) A blunt curved crochet, (ii) scalpel for opening the head of the child, (iii) dentated forceps, (iv) forceps for breaking up the bones, (v) instrument for extracting fragments of bones, (vi) pointed knife for perforating the skull and to empty it, (vii) scalpel for dissecting the head.

In addition, Soranus has given a clear and detailed account of the management and feeding of infants, and the choice of a wet-nurse. His classic work, Περι Γυναικειων Παθων, "On the Diseases of Women", is a text book for midwives, and was accepted as an authority and guide throughout the Middle Ages. His contemporary, Moschion, also wrote a guide for midwives, highly valued in Renaissance times. It is interesting as having formed the basis of the first printed work on midwifery.

A full account of the obstetrics of his time has been given by Galen, of Pergamos, born A.D. 130, a great physician, a man of wide observation and research. He must be classed with Soranus as having attained the highest level in obstetrics in the second century of the Christian era, and his teachings were to dominate Eastern medicine for centuries, just as those of Soranus influenced Western.

In the early part of the sixth century, a very full compilation of obstetric literature was made by Ætius, a Byzantine physician who made free use of Moschion's writings. In spite of perpetuating many erroneous ideas, the work has points of interest and importance. He quotes from Philomenus the use of the dioptera or vaginal speculum, represented on Egyptian papyri and obelisks, for the purpose of separating the external parts and seeing the cause of an obstructed labour.

There is an excellent description of the crotchet (*uncinus attractorius*); and a foreshadowing of the forceps is seen in his description of extraction of the head by the application of two crotchets, one to each side of the head.

The last of the writers of the old Greek school of obstetrics and gynæcology was Paulus Ægineta in the eighth century. There is nothing original in his midwifery, and he does not mention podalic version.

In the third and fourth centuries the decadent spirit of the Roman peoples, which preceded the downfall of the Empire, was reflected in their science and general culture. Obstetrics suffered a setback; the teachings of Soranus were lost or obscured in the night of intellectual darkness which lay over Europe for something like a thousand years. With the spread of Christianity, the monasteries became the closely guarded repositories of learning, while the masses were kept in darkest ignorance. A religious epoch, in an aggravated form, was repeated in obstetric history. Childbirth throughout Europe was in the hands of the lowest type of ignorant women. The obstetrics of the West in the Middle Ages was the tragedy of ignorance, superstition and fanaticism.

In the East, the teachings of Galen and of the Greek physicians, refugees in Persia, had been assimilated by the Arabs, a culture-loving and conquering race. The Arab school of midwifery was based partly on Galen and partly, after the Arab conquest of India, on the *Ayur Veda*. Childbirth was entirely controlled by women, the surgeon being called in solely for embryotomy. The practice was to turn all other presentations to the head. If an arm prolapsed they simply cut it off to make room for the head. The early practice of Arabian obstetrics was full of horrors. At a later period the art was improved under the influence of Rhazes, a physician of Bagdad, towards the end of the ninth century, who is credited with the discovery of the fillet, and a century later by Avicenna, a physician of Ispahan. He was a follower of the Hippocratic school and a prolific writer on obstetrics and gynæcology. He advised the fillet to be fixed to the head in certain cases, and when extraction failed he recommended the use of an instrument in essentials a midwifery forceps. Albucasis, writing a century and a half later, actually describes two kinds of forceps, the misdach and the almisdach (see Figure V). In the Arab original manuscript in the

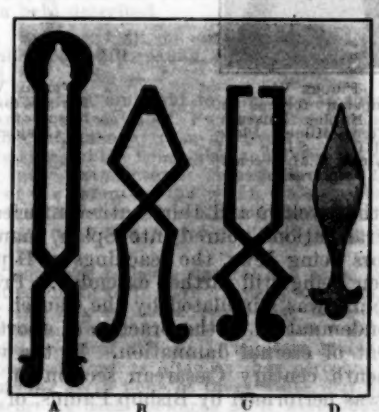


FIGURE V.
A = the almisdach of Albucasis, with which he crushed and extracted a large head. (Note, the misdach was of the same shape, but not so large). B = forfex Albucasis, with teeth to crush the child's head. C = vertigo Albucasis, with which he opened the matrix. D = embryotome of Albucasis for perforating the fœtal head.

Bodleian Library at Oxford quoted by Smellie, the former is described as straight, the latter as curved. In the Latin version, both are described as circular and full of teeth. A whole literature has grown

round this question as to whether they were forceps for the extraction of the living child (see Figure VI).

Meantime, while the intellect of Europe for the most part was under the shadow of an eclipse, the town of Salernum on the south western Italian seaboard was developing a medical school, with hospitals, clinics and a curriculum extending over eight years, under the teachings of Hippocrates and Galen. Translations of the works of Rhazes and Avicenna were brought to Salernum in the eleventh century by Constantinus Africanus, a North African Christian monk, and from this meeting place of Eastern and Western medicine the fame and influence of the School of Salernum spread widely throughout the Middle Ages. Women were trained as operating midwives, and the physician, so long banned from the care of childbirth, was once more called to their aid, if only to prescribe. Moreover, a fresh start was made in anatomical study, one body in five years being allowed at Salernum for dissection.

FIGURE VI.
Pompeian forceps in the Naples Museum. (After Milne, Plate XLIII.) Size of original, 21 centimetres.

FIGURE VII.
Forceps *longa et tersa* of Rueff (Mulder).

During the twelfth and thirteenth centuries Græco-Arabic translations poured into Spain, many of the translators being Jews, the teachings of Hippocrates and Galen being still further extended. Progress in obstetric art was stimulated by the Church of Rome in its condemnation of the practice of abortion with the threat of eternal damnation. In the middle of the fifteenth century Cæsarean section on a living woman was performed by Bishop Paulus, of Meirada, in Spain. The art was taking on a conservative and humanitarian aspect.

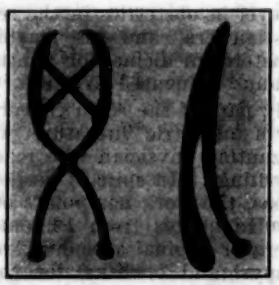
I quote for what it is worth the statement that in 1500 Jacob Naufrey, a Swiss, a castrator of pigs, did a successful Cæsarean section on his wife after she had been given up as hopeless by the midwives.

During the thirteenth and fourteenth centuries the spirit of anatomical research was quickened by the encouragement given to dissection by the universities, especially those of Bologna and Montpellier, and later, in the fifteenth century by Vienna and Tübingen. But the effect on obstetrics was small, when we recall the lead given by Alexandrian anatomy (out of which the development of obstetrics practically arose). For one thing, the dogmas of Galen prevailed; for another, midwifery was in the hands of women. The prejudice against the male practitioner attending a woman in labour was deep-rooted.

The care of childbirth was regarded as the proper sphere of women, the status of midwives was recognized by the medical profession, and it was for midwives that Eucharius Roesslen (or Rhodion), of Frankfort, published in 1513 his *Der Schwangeren Frauen Hebammen Rosengarten* ("Rosegarden of the Pregnant Woman's Nurse"), a work held in high repute on the Continent. Taken mainly from Moschion and Soranus, it perpetuates many of the errors of ancient writers, and is not a work of great value. Translated into English by Dr. Raynaulde in 1565, under the title of the Byrthe of Mankynde, it is the first English work on midwifery. It was illustrated with fanciful figures of the *fœtus in utero*.

Similar works were "The Rosengarten" of Walter Reiff, of Strassburg, 1546, and the "Hebammenbuch" of Jacob Rueff, Zürich, 1554. This latter was reproduced in English as "The Expert Midwife".

Rueff invented among other instruments his forceps "*longa et tersa*" for the delivery of a living child (see Figure VII). According to Professor Das, who has written a full history of the obstetric forceps, "this was the first expression of inoffensive and conservative function of the forceps". Rueff described two other obstetric instruments, for dilating the cervix and for removing the dead fœtus (see Figure VIII).



A B

FIGURE VIII.
A = apertorium of Rueff (from Witkowski). "A large cross-bladed dilator. The blades are convex externally and two hinged bars, crossing each other X-wise, connect their inner surfaces, acting like the spring in more modern dilators" (Doran). B = *rostrum anatis* of Rueff, for removing a dead fœtus (Witkowski).

Pierre Franco (1561) invented a self-closing trivalved dilating speculum, which he called *speculum matricis*. By turning a handle, it could be closed on the child's head in the vagina or cervix and used as a tractor.

In 1518 Dr. Thomas Linacre, Physician to Henry VIII, founded the Royal College of Physicians

of England, and from this period midwifery in England can be counted as being a part of the study of medicine. The midwife's chief duty seems to have been to push the presenting part up again, if it did not come down rightly, and to give various drugs. In cases of retained placenta "the midwif should anoynt her handes, and with her nayles pullen owte the secondine, if she mowe". It is interesting to note that a Margaret Cobbe attended Elizabeth Woodville, Queen of Edward IV, when Edward V was born, November 1, 1470. Queen Victoria was the first English Queen attended by a man.

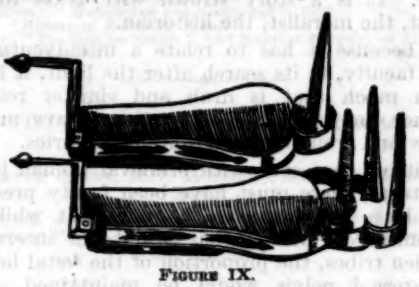


FIGURE IX.
Another form of a dilator or *speculum matricis*, whereof the declaration followeth (Paré).

The intellectual awakenings of the Renaissance, the diffusion of learning and culture by the printing press, the movement of escape from false tradition and the tyranny of ecclesiastical dogma, were all reflected in the saner and more scientific spirit in both the theory and practice of medicine. But for reasons already noticed, obstetrics showed no advance like that of medicine. It had yet to be freed from the errors of ancient writers, which still swayed a practice inferior to that of the Arabians or of the later Greek physicians, and one that was hampered by much false anatomical and physiological doctrine. The liberating process began with two men, each great in his own sphere—Andreas Vesalius, the maker of modern anatomy, and Ambroise Paré, master surgeon and obstetrician.

Vesalius's epoch-making work "*De Humani Corporis Fabrica*", which appeared in 1543, swept away the supremacy of Galen, whose work Vesalius corrected and enlarged. For the first time, an accurate description of the pelvis was given. Paré was then thirty-three years of age, and the appeal that the *Fabrica* made to him is evidenced by the fact that he wrote an epitome of it which was very popular with the surgeons of his day.

From this period, as the result of the teachings of Vesalius and Paré, modern scientific obstetrics can be dated.

Paré was born in 1510 and died in 1590. From barber-surgeon he rose to be the greatest army surgeon of his time, if not of all time. His was a career of adventure and romance. He had the courage of a soldier and the simplicity of a child.

In an age still steeped in superstition and mysticism, it needed a man of independent spirit to break through the barriers of prejudice and false authority which barred the way of progress; and though he shows a childish belief in fanciful theories, yet mixed with this credulity is the scientific spirit, the spirit of research. He is not afraid of trying new methods; his observation is keen; he avows his errors. Withal there is the underlying humanity, great kindliness, and a natural piety. "*Je le pansay, Dieu le guarit*", he says, "I dressed him, God healed him". If we smile at his challenge to posterity, let us ascribe it to self-reverence. He believed in himself—he had great reason.

When Smellie acclaims Paré as "the famous restorer and improver of midwifery", he gives him no more than is his due. Until Paré revived podalic version, it had disappeared from obstetric practice for the fifteen centuries which had elapsed since it was taught by Soranus. In Paré's time, the age-long prejudice against the man-midwife was still active. In 1552 Dr. Veit, of Hamburg, was publicly branded for having attended as a midwife. Even some thirty years after his death (Paré died in 1590), it is recorded that a Dr. Willoughby had to crawl surreptitiously into a darkened lying-in room to help his daughter, a midwife, with a case of difficult labour. To the end of his life, Paré opposed Cæsarean section on the living woman (which was performed by barber-surgeons), probably because it was almost uniformly fatal, though François Rousset, of Paris, who published the first monograph on the subject in 1581, reported successful cases, and one case of six successive operations on the same patient! The evidence is open to doubt. Paré's opposition had the effect of banning the operation in France for a considerable period. Incidentally, Paré made the first official *post mortem* examination in 1562.

Paré says:

But because that the travail of the first time of childe-birth is wont to bee very difficult and grievous, I think it not unmeet that all women, a little before the time of their first travail, annoint and relax their privie parts with the unguent here described.

℞. Sper. ceti ʒii, ol. amigd. dul. ʒiv, cerae alb. ç medul. cervin ʒiii, exung. ans ç gallin. an. ʒi, tereb. venet. ʒii.

Make thereof an ointment to annoint the thighs, share, privie parts and genitals. Furthermore, it shall not be unprofitable to make a truss or girdle of most thin and gentle dog-skin, which being also annointed with the same unguent, may serve verie necessarily for the better carrying of the infant in the womb. Also baths that are made of the decoction of mollifying herbs are also verie profitable to relax the privie partes a little before the time of the birth.

That is supposed to bee a natural and easie birth, when the infant commeth forth with his head forwards, presently following the flux of water; and that is more difficult, when the infant cometh with his feet forwards; all the other waies are most difficult. Therefore Midwives are to bee admonished, that as often as they perceive the childe to be comming forth none of these waies, but either with his bellie or his back forwards as it were double; or els with his hands and feet together, or with his head forwards and one of his hands stretched out, that they should turn it, and draw it out by the feet; for the doing whereof, if they bee not sufficient, let them crave the assistance and help of som expert Chirugian.

In his description of "The Chirurgical Extraction of the Childe from the womb either dead or alive", Paré has given the technique of podalic version with much detail. He gives directions for the preparation of the surgeon, the posturing of the woman, and her immobilization by binding, the soft loop for the foot to be "made of ribbon with which women bind their

hair or such like, to be tied round the ankle of the foot when it has been drawn outside the vulva, after which it is put back and the other foot drawn out". He gives precautions against strangling the infant in drawing out the body, with a special warning in the case of twins, lest the lives of the mother and the children should be lost. The child must not be drawn out with his hands forwards, "for so his head would double backwards over his shoulders, to the great danger of his mother".

> Once I was called unto the birth of an infant whom the midwives had essayed to draw out by the arm, so that the arm had been so long forth that it was gangrenate, whereby the child died. I told them presently that his arm must be put in again, and he must be turned otherwise. But when it could not be put back by reason of the great swelling thereof and also of the mother's genitals, I determined to cut it off with an incision knife, cutting the muscles as near as I could to the shoulder, yet drawing the flesh upwards, that when I had taken off the bone with a pair of cutting pincers, it might come down again over the shivered end of the bone, lest otherwise when it were thrust in again into the womb, it might hurt the mother. Which being done, I turned him with his feet forwards, I drew him out as before said.

And finally, he describes the method of drawing out the dead infant with hooks, and of dealing with the head of the dead infant, when it remains in the womb separated from the rest of the body.

Very full and sound advice is given for the management of the third stage of labour. Like Hippocrates, he advises the "provocation of the expulsive faculty" by sternutatories, and the dangers of manual extraction of the placenta are well stressed.

Paré used the *accouchement forcé*, with a three-bladed dilator like the μήλη of Hippocrates. Gullemeau, his pupil, says he saw Paré perform dilatation of the cervix in labour. His own married daughter was so delivered. Paré himself says that on one occasion, being called to a woman in labour, he went away without delivering her, "leaving", he said, "the matter to Nature and recommending her to God".

In sixty-seven chapters "on the generation of man" he deals with gynæcology and obstetrics. If some of his ideas are fanciful, they are in the main common sense, and in some aspects curiously modern. It is quite another Paré who wrote the chapters on monsters and prodigies, with illustrations of curious and imaginary beasts.

His credulity is past understanding if he really believed this extraordinary tale recorded by him. In 1277, a poor woman, the mother of twins, being insulted by a Countess Margharet, prayed that God would send the lady, then forty-two years of age, as many children as there were days in the year. On Good Friday, 1278, the Countess gave birth to 365 infants, 182 males, 182 females and one hermaphrodite. They were all baptized in two large brazen dishes, still on exhibition, by the Bishop of Treras, the males being called John and the females Elizabeth. Dr. Fair's comment on this is that no mention is made of the christening of the three hundred and sixty-fifth.

We can smile at his credulity without ceasing to respect and admire his bold and practical surgery.

With no knowledge of the circulation of the blood, with no stethoscope, no thermometer, no anæsthetics, and living in an age still struggling in the throes of a scientific rebirth, he carried surgery to a height not previously attained, and gave scientific obstetrics a lead from which it has never looked back.

His theory and practice have served their day; part alone survives, but his title remains unchallenged as the Father of Modern Obstetrics.

Such is an outline, a very imperfect one, of the history of childbirth, which began when woman emerged from the quadrupedal state to enter upon the long process of adapting herself to the erect posture. It is a story strewn with texts for the biologist, the moralist, the historian.

And because it has to relate a misadventure of human faculty, in its search after the light, it has to take in much that is drab and sinister reading. Ignorance, prejudice and superstition have marked the slow and troubled evolution of obstetrics.

Admitting that even with primeval woman labour was natural, there must have been faulty presentations. It is reasonable to assume that while the tribe remained "pure", that is, did not intermarry with alien tribes, the proportion of the fœtal head to the maternal pelvis would be maintained. With tribal and racial intermarriage, disproportion would arise, and to this fundamental disability of labour there would be added, in process of time, others, brought about by the denaturalizing influences of civilization.

Yet, from the very beginning, in the coordination of these nervous and muscular energies, which constitute the bio-dynamics of labour, Nature has provided a mechanism, which has withstood, and withstood to some purpose, these antagonizing forces. It is to the misunderstanding and consequent maladministration of this mechanism that are mainly due the mortality and morbidity in childbirth writ large across the pages of twenty centuries of its history.

One conclusion seems inescapable, namely, that the intelligent and sympathetic care of woman has grown with every advance of civilization, in other words, that the obstetric practice of a people has at every phase of its history been a measure of its culture, its ethics, its capacity for sympathetic understanding. Convincing evidence of this can be seen in the advance made by obstetrics in the last three-quarters of a century, a period of great progressive practical humanitarianism.

It was an instinctive humanity that guided the untutored art of the primitives; it was a noble sense of service that warmed the teachings of Hippocrates, and it was a deep compassion for woman in her travail that inspired the courageous and liberating obstetrics of Paré.

Acknowledgements.

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Bibliography.

Hippocrates: "*Oeuvres Complètes*" (E. Littré); "The Genuine Works" (Francis Adams). (Sydenham Society.)
Soranus: *Sorani Gynaeciorum vetus translatio Latina.* (Valentino Rose.)
Paulus Aegineta: J. L. Helberg. Leipzig, Berlin. 1924.
Ambroise Paré: "The Works of Ambrose Parey". Translated by Tho. Johnson. London, 1649.
G. J. Engelmann: *La pratique des accouchements chez les peuples primitifs*; "American System of Obstetrics".
R. W. Felkin: Notes on Labour in Central Africa, *Transactions Edinburgh Obstetrical Society*, Volume LX, 1884.
Osler: "The Evolution of Modern Medicine".
Halban and Seitz: "*Biologie und Pathologie des Weibes*". 1924.
David Macht: "Embryology and Obstetrics in Ancient Hebrew Literature", *Bulletin of the Johns Hopkins Hospital*, 1911.
Kedarnath Das: "Obstetric Forceps: Its History and Evolution", 1929.
Walter E. Roth: "Ethnographical Studies among the North-west Central Aborigines".
Ed. Schumann: "Deities and Childbirth among Ancient Peoples", *American Journal of Obstetrics and Gynæcology*, 1925.
E. Schleben: "*Mutterschaft und Gesellschaft*", 1927.
Lecky: "History of European Morals".
F. Meyer: "The Case for Nature", THE MEDICAL JOURNAL OF AUSTRALIA, May 21, 1921, page 419.

THE PITUITARY GLAND AND ITS SYNDROMES.[1]

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LORD DAWSON OF PENN,[5] in his presidential address at the Centenary Meeting of the British Medical Association in London in July of 1932, said of the pituitary gland:

> But surely the pituitary is the wonder world of the ductless glands. This structure, consisting of two lobes and set in the base of the skull, though weighing not more than three-quarters of a gramme, in a special sense presides over our destiny. The anterior lobe is the source of no fewer than four hormones which are concerned with growth, metabolism and sex activity. The posterior lobe is the source of two hormones which are concerned with vaso-constriction and (in the pregnant woman) with parturition . . . Here then is a wonderful kingdom over which the minute pituitary gland rules enthroned in the middle of the skull. This gland presides over the destinies of ourselves and our descendants. The anterior lobe influences our growth and our sex, its dominance and degree. Without it, no sex desire, no conception; without the posterior lobe, no parturition. Perhaps Descartes was not far afield when he placed the soul in the pineal gland.

How far and how rapidly our knowledge of the functions and diseases of the pituitary has advanced will perhaps be evident if you will allow me to take you back twenty years to the days when I "did" physiology under the late Sir Edward Stirling. In the 1911 edition of Halliburton's "Physiology", the functions of the pituitary are summarized as follows: The pituitary gland consists of three parts. Firstly, the anterior lobe of which the precise function is undetermined, although it probably produces an internal secretion which influences growth. Abnormal hypertrophy of the pituitary produces acromegaly and, if the view advanced above of the anterior lobe is correct, the condition is caused by an increase of the internal secretion. Secondly, the *pars intermedia* which produces a colloid substance which passes into the third ventricle by way of the posterior lobe. This secretion is thought to be similar to that of the thyreoid gland, but contains no iodine. Thirdly, the *pars posterior* whence passes a secretion into the third ventricle, the function of which secretion is far from clear. Furthermore, aqueous extracts of the gland when injected were found to cause a temporary rise in blood pressure, a dilatation of the renal capillaries, followed by diuresis and an increase in the secretion of milk. It was known that the anterior lobe was necessary for life, and that partial extirpation of this part in experimental animals was followed by adiposity and lack of sexual development. This, then, was the situation twenty years ago. In the same and contemporary text books bare mention is made of the subthalamic region, and no function other than that of a relaying station for sensory fibres was known for this part of the brain.

Anatomy of the Pituitary Gland.

The pituitary gland lies in the *sella turcica* of the body of the sphenoid bone, and is separated from the sphenoidal air sinuses by a layer of bone of varying thickness. Although the sella is bounded in front by the middle clinoid processes, it is the outline of the more laterally placed anterior clinoid processes that indicates the anterior boundary of the sella in an X ray film. Posteriorly, the sella is bounded by the *dorsum sellæ*, from which the posterior clinoid processes arise; these serve to show the posterior limits of the sella in a skiagram. The sellar cavity is partly enclosed by the sellar diaphragm, through which passes the infundibulum or stalk, a projection from the third ventricle. The pituitary is surrounded by the arteries constituting the circle of Willis, and is in relation laterally with the cavernous sinus and with the cranial nerves that lie therein. The optic chiasma lies above and usually in front of the pituitary. The anatomical relations of the gland vary within wide limits. The clinoid processes are subject to great differences in length, and in some cases they may even meet. The relation to the chiasma varies greatly, and the importance of this fact will be pointed out later. The sellar diaphragm in most text books is described as being complete; this is far from being the case, for as a rule large gaps may be seen in its continuity. The pituitary has an extensive blood supply, chiefly from the internal carotid arteries directly, and from the anterior communicating arteries. The blood supply of the posterior lobe is quite distinct from that of the anterior lobe. The nerve supply is profuse. The anterior lobe has fibres passing to it from the cervical sympathetic by way of the carotid plexus, while the posterior lobe derives its supply directly from the hypothalamic region of the brain.

The gland itself is made up of two distinct lobes, the anterior and posterior. It is usual to include the *tuber cinereum* and the infundibulum in any consideration of the region. The anterior lobe consists of the *pars anterior* and the *pars tuberalis*. The *pars anterior* is very vascular, and consists of cells arranged in the form of columns or nests imbedded in connective tissue. When stained with hæmotoxylin-eosine, this part is found to consist of three distinct types of cells, which are now regarded as subserving different functions. Some, the acidophile granular cells, take up the acid eosine; others, the basophile granular cells, take up the basic hæmotoxylin, and the non-granular chromophobe or neutrophile cells remain unstained as far as cytoplasm is concerned.

[1] Read at a meeting of the South Australian Branch of the British Medical Association on October 27, 1932.

The *pars tuberalis* consists of a collection of vesicles lined by basic staining cells situated in the *pia mater* above the sellar diaphragm and is in relation with the infundibulum and *tuber cinereum*.

The posterior lobe is made up of the *pars intermedia* and the *pars nervosa*. The former is, as it were, wrapped round the anterior portion of the *pars nervosa* and consists of closely packed basophile cells, amongst which are seen vesicles containing colloid. It was this colloid that led earlier observers to regard this part as being related to the thyreoid gland.

The *pars nervosa* consists almost entirely of neuroglial tissue in which is seen colloid matter similar to that found in the *pars intermedia*.

According to Critchley and Ironsides,[3] the pituitary, from an embryological point of view, must be considered as a fusion of an upgrowth from the primitive stomodæum with a process of the forebrain. Very early in fœtal life the ectoderm of the stomodæum becomes invaginated to form a recess, this pocket is Rathke's pouch. The ectoderm, which at an earlier period was in intimate relation with the epithelium of the forebrain, now becomes more and more separated. Rathke's pouch thus becomes more deeply embedded; the proximal end narrows to form a hollow stalk, the cranio-pharyngeal canal. The portion of the buccal invagination most distal to the stomodæum persists, and forms, in the twenty millimetre embryo, a closed sac. Meanwhile an evagination has sprung from the floor of the forebrain, immediately behind the optic recess, and forms the infundibular process. By the end of the fourth week Rathke's pouch and the infundibular process are in actual contact with each other. The cells constituting the anterior aspect of Rathke's pouch now proliferate, and from them arise the *pars anterior*. The posterior layer of Rathke's pouch develops into the *pars intermedia*. Two lateral outgrowths appear, which fuse anteriorly and constitute the *pars tuberalis*. The infundibular process of the forebrain develops anteriorly into the *pars posterior*, whilst the hinder portion becomes the stalk or infundibulum. Hence the portions of the mature pituitary, which are directly of ectodermal origin, are the *pars anterior*, the *pars intermedia* and the *pars tuberalis*; the cleft lying between the *pars anterior* and *pars intermedia* represents the primitive cavity of Rathke's pouch. The proximal or buccal extremity of the cranio-pharyngeal canal does not usually disappear entirely, but persists as the pharyngeal hypophysis. This body is a small structure, three to five millimetres in length, lying in the mid-line near the junction of the nasal septum with the roof of the pharynx. Remnants of the buccal epithelium are not infrequently found in the neighbourhood of the pituitary gland.

In considering the functions of the pituitary gland a very difficult, and as yet partly unsettled, problem is encountered. Recently, Harvey Cushing[1] and others have advanced the view that the hypothalamic region of the brain is closely bound functionally with the pituitary. To this alliance the name "neuro-hypophyseal mechanism" has been given. The hypothalamus is that part of the brain that lies immediately beneath the optic thalamus, its most important part being the *tuber cinereum* with its nuclei. The tuber forms part of the floor of the third ventricle, and in the centre of this region is the infundibulum, from which originates the stalk of the pituitary. In this area several nuclei made up of cells of varying size have been described, and attempts have been made to allocate functions to each of these, but as yet the results are inconclusive. Briefly, it is thought that the activities of the pituitary gland are under control of nerve centres in the hypothalamus, The vegetative nervous system, both sympathetic and autonomic, has a central nervous station in this region whence originate the impulses that produce the activities of the various organs controlled by this nervous system. Not only that, but the various metabolic activities and emotional reactions of the organism are thought to be controlled by this region. The nerve supply of the pituitary from the hypothalamus has been indicated previously. It is quite easy to understand the great confusion and the apparently contradictory results of experimental physiology and of pathology when this view is considered. As Harvey Cushing suggests, a lesion of the hypothalamus, of the nerves to the gland or of the pituitary itself would, according to this view, produce the same result.

In chronic epidemic encephalitis, the hypothalamus is almost always affected, and when the great similarity of many of the clinical manifestations of this disease to what is regarded as evidence of "dyspituitarism" is considered, the possibilities of this view are brought home. For examples, take the adiposity, the cachexia, the disorders of sleep and, perhaps most striking of all, the changes in personality common to both conditions.

Physiology of the Pituitary Gland.

In a consideration of the physiology of the pituitary, the difficulty of differentiating between a function of the gland alone or of the hypothalamus alone or both together again arises. Most of the findings so far obtained have been the results of experimental work in the way of deliberate injury to various parts of this region or of the study of autopsy material. In both cases, the difficulty has been to determine whether a pure lesion has been present, that in, say, a pituitary lesion there has been no accompanying hypothalamic upset due to imperfect technique on the one hand or from pressure of a pituitary tumour on the other hand. Nevertheless, certain definite functions have been allocated to various parts of the gland. Even then there remains the probability that these functions are under the control of the hypothalamus. It is certain that the acidophile cells of the anterior lobe produce a hormone that stimulates growth. That this is so is shown by the fact that a functioning adenoma made up of these cells is found in acromegaly. Further, the work of many observers supports this, especially the work of Putnam, Benedict and Teel,[6] who, by means of injecting daily over a period of fourteen months aqueous extracts made from ox anterior lobe produced in the dog a condition indistinguishable from acromegaly.

The basophilic cells produce hormones which are concerned with the proper development of the sexual organs and secondary sexual characteristics and reproduction generally.

In addition to this, it has been suggested that the anterior lobe controls the activities of the whole endocrine system, is concerned with metabolism and is active in the control of mental development. As yet no function has been ascribed to the chromophobe cells.

In considering the functions of the *pars intermedia*, it is probably not correct to take the pharmacological action of pituitrin as representing the action of the product of this part in the body. Pituitrin is a crude extract of the whole posterior lobe and, like all tissue extracts, contains histamine, itself a potent substance. Although nothing definite has yet been proved, the *pars intermedia* may have an influence on the secretion of urine, for injury to the posterior lobe may result in polyuria, which is relieved by means of pituitrin. It may control the tone of the capillary and other unstriped muscle, and it may influence carbohydrate metabolism for pituitrin is pharmacologically opposed to insulin. In determining the functions of this part, the great difficulty is to produce a lesion confined to the *pars intermedia* and not interfering with neighbouring structures.

It would seem that no hormone is produced by the *pars nervosa*, but that this region acts as a channel for the hormones of the *pars intermedia* to pass to the infundibulum, and so to the blood stream by way of the cerebro-spinal fluid.

It is interesting to note that the hormone-producing parts of the gland all arise from the stomodæum.

Syndromes of the Pituitary.

In considering the clinical syndromes of the "neuro-hypophyseal mechanism" the same difficulty as was met with above again arises. As a rule we do not know whether the primary defect is in the gland itself or in the hypothalamus or in the nervous tissue joining these structures.

Nevertheless, the signs and symptoms may be placed into two large groups: firstly, those that arise from a disorder of the hormonal secretion, and, secondly, those that arise from such an abnormality as a neoplasm pressing upon the neighbouring structures. Again, arising out of the latter there may be seen the effects of a rise in intracranial pressure, either from obstruction to the cerebro-spinal fluid circulation by direct pressure or from cerebral œdema without such directly acting pressure. It is hardly necessary to go into the details of the manifestations of increased intracranial pressure, except to say that they exactly resemble those due to neoplasm elsewhere within the skull and that they occur most often with suprasellar tumours.

Of the neighbourhood signs, perhaps the most striking are the disorders of the optic nerve. The close relationship of the pituitary to the optic nerve, chiasma and tracts has been pointed out and it is easy to understand how a neoplasm of the pituitary will bring about gross visual defects. As has previously been indicated, the anatomy of this region varies largely, the relation of the gland to the optic system is most variable. For this reason, the signs obtained are accordingly inconstant in type. Field defects of practically any pattern may be obtained, but it would seem that a bitemporal hemianopia is the most usual. Primary optic atrophy from direct pressure is not uncommon and pituitary region neoplasm is probably the most common cause of this sign in the adolescent and young adult. Even for such a condition as Leber's disease many claim pituitary changes as a causal factor. Papillœdema is rare and practically occurs only in the presence of a suprasellar tumour. Pressure upon the third, sixth and ophthalmic division of the fifth nerve gives the characteristic signs, while pressure upon the cerebral peduncles gives evidence of pyramidal system defect. Epileptic fits are fairly commonly met with in tumours of the pituitary. By some these are said to be due to pressure upon the uncinate gyri, but they do not as a rule conform to the description of uncinate fits as given by Hughlings Jackson.

In my limited experience I have seen many cases in which fits were associated with lesions in the pituitary region.

The pituitary or neuro-hypophyseal syndromes are many and varied, and it would seem that there are practically no limits to the possible number of such syndromes. Perhaps the best known is acromegaly.

Acromegaly.

Acromegaly was first accurately described as due to disease of the pituitary by Pierre Marie in 1886. The condition is usually regarded as being a rare one, in its major form it may be so. Acromegaly is most often due to an acidophile adenoma of the anterior lobe which produces an excess of the growth hormone. This results in excessive growth of the skeleton and organs generally. Some authors describe a simple hyperplasia of the anterior lobe as being the only lesion present in some cases. In a few instances no lesion of the pituitary has been found. By some it is suggested that changes occur in an accessory pituitary in such cases.

Apart from this disorder of growth, there is at first an over-stimulation of the other functions of the anterior lobe. Thus there arise excessive sexual desire and gonadic activity with abnormal metabolism. The metabolic rate is raised and the carbohydrate tolerance is reduced so that hyperglycæmia with glycosuria is found. The other endocrine glands are stirred to greater activities. In the later stages there is a gradual swing over to an opposite state of affairs. There is seen gonadic deficiency with lowered metabolic rate and an increased tolerance to carbohydrates with lowering of the general endocrine activities. It would seem that the acidophile adenoma at first stimulates the activities of the rest of the anterior lobe and that in the final stages these activities are reduced by the increasing pressure of the neoplasm. Of course, many intermediate states are seen. Acromegaly is a slowly progressive disease, starting as a rule between the ages of twenty and forty years. That is, it commences in early adult life or during the active reproductive part of life. In its earlier stages it is usually unrecognized either

by the patient or his friends. One classical case occurring in a member of our profession, Dr. Leonard Mark, of London, apparently began at the age of twenty-four years and lasted for more than fifty years. Dr. Mark did not recognize his illness till Pierre Marie picked him out at a clinic and told him of his disability. In his case the disease was arrested for the last fifteen years of life.

The full blown acromegalic presents a very typical picture. As a rule the patient is tall, for acromegaly tends to pick out naturally big individuals or members of well built families. There is a general enlargement of the skeleton, the limbs being more severely affected than the trunk. The skull is very much enlarged, the bony ridges and eminences being increased in size and density. To conform to this the air sinuses become more roomy. The *sella turcica* is as a rule sooner or later enlarged. The lower jaw becomes more prominent, and the angle is often straightened out; with this the space between the teeth is widened. The patient usually states that he has had to take increasingly larger sizes in boots, hats and gloves. The enlargement of the feet and hands is due more to an increase in soft tissues than to bony overgrowth. An X ray examination of these parts will reveal little osseous increase, except the tufting of the ends of the distal phalanges, a change almost pathognomonic of acromegaly. In addition, there is enlargement of other soft parts, thus the lips and ears become gross and swollen in appearance, while the tongue attains enormous proportions, this disease producing the largest tongues seen in medicine. As a result of this, articulation becomes slow and thick, and this, with the deep pitched phonation resulting from enlargement of the larynx produces a very characteristic speaking voice. The skin becomes redundant and coarse and has a tendency to be yellowish or brown in colour; the hair grows well and may be increased on the body. There is a general splanchnomegaly, so that the liver, kidneys, spleen and heart become enlarged. The colon often becomes excessively large, this leading to the obstinate constipation of which most acromegalics complain.

Glycosuria with a "climbing" type of sugar curve is present in about 40% of acromegalics, and this condition may lead to coma. There is often evidence of change in the other ductless glands. The thymus may be enlarged and the adrenals are often abnormal. The thyreoid may be large, goitrous or atrophied. Menstrual disorders and sexual abnormalities are often met with. The patient may complain of headache and of a general bodily heaviness. Often there are obvious personality changes such as loss of memory, mental retardation, depression with bursts of temper and even delusions. These upsets may lead to the "certification" of sufferers from this disease, so that any large mental hospital has a few acromegalics amongst its population. In addition to the above, the signs of pituitary tumour may be present.

As has been indicated above, the hormonal signs tend to swing over to a condition of "hypopituitarism" after a while. Acromegaly tends to be associated with such other diseases as myxœdema, exophthalmic goitre and syringomyelia. It is said that 10% of acromegalics suffer from the last condition.

Gigantism.

Gigantism is a condition in which there is an overgrowth of the skeleton due to an over-secretion of the growth hormone starting in the normal age period for growth. In these cases, growth goes on beyond the normal age limits. The skeleton of the Irish giant who was over seven feet in height has a very much ballooned sella. This condition is not one of acromegaly in the adolescent for many of the signs of this state are not present, and in later life true acromegaly may be superimposed.

Pituitary Basophilism.

Pituitary basophilism is the name given to a syndrome recently described by Harvey Cushing.[2] This condition is frequently associated with a demonstrable basophile adenoma of the anterior lobe. The condition as a rule arises in young adults and has a course ending fatally in slightly over five years. It is characterized by a suddenly acquired painful adiposity more or less limited to the face, neck and trunk, the limbs being spared; with this there is an evident kyphosis. In the female, amenorrhœa occurs early, and in the male impotence ultimately supervenes. In women there is an increase of the hair of the face and trunk; this also occurs in preadolescent males, but a loss of hair occurs in adult men. The skin presents a generally dusky appearance, the face being suffused. Purplish coloured *liniæ atrophicæ* appear on the abdomen which closely resembles that of a late pregnancy. As a rule arterial hypertension is present, a recording of 200 millimetres of mercury systolic with 130 millimetres diastolic being an average one; with this there is polycythæmia. In addition, such symptoms as backache, abnormal pains, fatiguability and ultimate extreme weakness are usually complained of. In a certain number of cases changes in other endocrine glands are found; thus colloid changes or fibrosis of the thyreoid, adenoma or cortical hyperplasia of the adrenals, atrophy of the ovaries or testes, may be seen. Cushing suggests that, as is the case with acromegaly, the other endocrine changes are secondary to and the result of the pituitary abnormality.

Hypopituitarism.

While the conditions already mentioned may safely be said to be due to over-activity of the gland, by some termed "hyperpituitarism", the opposite state of "hypopituitarism" is not so certainly due to abnormality of the gland itself, for in many cases the primary trouble would seem to be in the nervous control from the hypothalamus. The similarity between the effects of chronic encephalitis and "hypopituitarism" has been indicated above.

Furthermore, some cases of "hypopituitarism" fail to show pituitary gland lesions, but on the other hand show changes in the hypothalamus, not necessarily post-encephalitic.

The main features of the state of "hypopituitarism" are obesity, a smooth, pale soft skin, a lack of hair on the body and face, loss of beard and moustache except near the mid-line, a lack of sexual development both as regards the organs and the secondary characteristics and a general heaviness of body and

mind with a tendency to somnolence. The obesity may be general or may be more of the female type, that is, greatest at the hips, thighs, breasts, abdomen, and perhaps shoulder girdles. As a rule there is a reddish tinge in the skin over the plump parts. While the skin elsewhere presents a pale, pasty appearance, no anæmia is found. Generally there is a loss of sexual desire, with or without actual impotence. Disorders of menstruation ending in amenorrhœa are common, and sterility is the rule. This condition may be caused by any tumour pressing the pituitary region, such as a chromophobe adenoma, a suprasellar cyst, a meningioma of the dura, and so on. In the same way hydrocephalus may be the cause, as may a basal syphilitic meningitis, usually congenital. On the other hand, the lesion may be limited to the hypothalamus, the pituitary itself showing no lesion.

Fröhlich's Syndrome.—The syndrome of adiposegenital dystrophy or Fröhlich's disease is one of the best known of the "hypopituitary" states. This condition is characterized by extreme adiposity, lack of development of the sexual apparatus, and lack of growth generally. As a rule individuals presenting this syndrome are torpid and lazy and have an increased tolerance to sugar, an interesting point being their great tendency to steal sweets. The mental state tends to remain childish. As a rule the signs become apparent at the age when puberty should arrive. As has been indicated above, the lesion bringing about this condition, as is the case in other "hypopituitary" states, is variable, but probably the chromophobe adenoma is the most usual, although chronic epidemic encephalitis has produced a crop of such cases of recent years.

Emaciation.—While obesity is commonly found in "hypopituitarism", the opposite condition of emaciation also occurs; a similar finding occurs in chronic encephalitis. The condition described by Gilford as progeria in which there is arrest of growth accompanied by premature senility, and that form of dwarfism known as ateleiosis, in which the subject is born a dwarf, have been ascribed to deficient pituitary function. Keith has suggested that the latter occurs when the deficiency is congenital and the former when this supervenes during the age period of normal growth. The condition described by Simmond as hypophyseal cachexia, in which there occurs a profound progressive wasting of the body ending fatally, is associated with atrophy of the pituitary usually regarded as being due to a destructive vascular lesion of more or less sudden onset. This is probably of a nature similar to the former states.

Dercum's Disease.—Dercum's disease, or *adiposis dolorosa*, once thought to be due to a thyreoid insufficiency, is now regarded as being due primarily to a pituitary lesion, the thyreoid lesion often found to be present being, as in acromegaly, the result of the pituitary abnormality. In this condition, which comes on in early adult life, large masses of fat occur in the skin. These fatty areas have no special distribution, except that they tend to be more pronounced in the proximal parts of the limbs. The special feature is that the fatty collections are very painful, hence the name. Associated with these changes are personality changes, usually depression with extreme irritability and lack of emotional control. As is the case with acromegaly various organic neurological changes may be associated.

Infantilism.—The subject of infantilism is a very chaotic one, but it is usually held that the type of Brissaud and that of Lorain are due to "hypopituitarism".

The Lorain type is characterized by a small body and child-like limbs. The features are well shaped, the neck is long, shoulders broad and the muscles well developed. While there is lack of secondary sexual characters, the genital organs are well formed. As a rule the epiphyses unite at a period later than normal.

The Brissaud type presents evidence of mild hypothyreoidism in addition to those of pituitary defect. The child resembles a Dutch doll as much as anything. The hair is fair and fine, the cheeks red and rosy, the eyes prominent, the lips thick, and the eyebrows poor. The head is large and the abdomen prominent. The body is generally plump and the epiphyses late in development. The sexual organs and secondary characters are poorly developed and dentition is late. The mental state is one of childishness. Some authorities regard the Brissaud type as representing Fröhlich's syndrome coming on before the age of puberty.

Diabetes Insipidus.—*Diabetes insipidus*, a syndrome characterized by thirst and the passage of large quantities of pale urine of low specific gravity, was at one time thought to be always due to a lesion of the posterior lobe. The origin of this view was probably based upon the good results obtained by the use of pituitrin in cases of this syndrome. That this is not always the case is shown by the fact that this condition may arise from lesions other than those involving the pituitary gland itself. Thus a basal syphilitic meningitis, injury to the base of the skull, such as fracture, tumour in the region of the hypothalamus and chronic epidemic encephalitis may bring about this condition. It would seem that a lesion affecting the "neuro-hypophyseal mechanism" in any of its parts will cause the condition, and this probably by upsetting some hormonal activity of the *pars intermedia*.

Tumours Affecting the Pituitary.—Tumours affecting the pituitary with two exceptions present a somewhat similar clinical picture, that of "hypopituitarism" with or without neighbourhood signs or evidence of increased intracranial pressure. The two exceptions are the acidophile and the basophile adenomata, which have a symptomatology of their own. Of all such tumours, the chromophobe adenoma is the most common. This neoplasm is at first intrasellar, but may overflow out of this cavity. It consists of closely packed neutrophile cells and is usually slow growing; it becomes clinically evident in adult life, mainly by the "hypopituitarism" which is associated with it.

The suprasellar tumours may be derived from tissue associated with the pituitary or from purely non-pituitary elements. Of the latter, the most common is the meningioma of the sellar diaphragm. This tumour arises apparently from the arachnoid villi

of the meninges enclosing the venous sinuses near the sellar diaphragm. An important point in the clinical course of these tumours is that signs such as field defects may be present in one eye many years before similar changes are found in the eye of the other side.

Those tumours belonging to the former class have been divided by Duffy[4] into three groups, whose clinical course varies greatly. Firstly, the papillary cyst, or intracystic papilloma, which consists of a cavity lined with a squamous epithelium and runs a benign course. Secondly, the adamantinoma which may be calcified or uncalcified, solid or cystic. This tumour usually presents areas in which the epithelium has become similar in structure to the ameloblasts of the embryonic enamel organ; hence the name. Some may resemble the basal celled epithelioma of the skin, while others may resemble a teratoma. This tumour may be locally malignant, but does not tend to metastasize. Thirdly, the very rare malignant spinal celled carcinoma with metastases in the cervical lymph glands. The above tumours originate from the remains of the cranio-pharyngeal canal and usually lie central to the infundibulum and at the upper angle of the *pars anterior*. To this group Cushing has given the name cranio-pharyngioma. Lying above the chiasma as they do, the upper parts of the retinæ tend to become affected first, so giving defects in the lower fields. Most of them tend to become calcified and this with erosion of the clinoid processes shows up in a skiagram and helps a diagnosis of suprasellar mass to be made. Many of these tumours become evident in childhood or in early adult life, and by some authorities are regarded as being congenital. They are practically the only group of tumours affecting the pituitary which lead to papilloedema with any degree of frequency. One peculiarity of their clinical course is the occurrence from time to time of "toxic" symptoms such as febrile periods with headaches, vomiting and other evidence suggestive of meningitis.

Hydrocephalus.—Finally, the state of "hypopituitarism" may be brought about by hydrocephalus or increased intracranial tension arising from any cause. This is the result of the increasing pressure on the pituitary region. In such a case, the symptoms referable to the pituitary would come on only late in the course of the illness; this would serve to differentiate such a case from "hypopituitarism" arising primarily from a lesion in the pituitary region.

Treatment.

Some months ago I was discussing this evening's paper with a friend from the country, a very sound practitioner who has kept abreast of modern medicine. He said to me: "Well, that's all very nice and interesting, but, you know, people come to you to be cured and not to be observed, what are you going to do about it?" I agreed with him, but pointed out that in the present state of our knowledge we can cure only a minority of diseases, but we can give relief by means of symptomatic treatment, and this to a certain extent applies to the pituitary syndromes.

As regards glandular substitution therapy, we have as yet no very reliable pituitary preparation with the exception of pituitrin. Anterior gland extracts prepared on a commercial scale are as yet somewhat disappointing in their results in spite of the voluminous literature issued by the manufacturing chemists. The use of pituitrin is more or less limited to cases of *diabetes insipidus*. Given intramuscularly or even sprayed upon the nasal mucosa it serves to control the polyuria characteristic of this syndrome.

Some authorities claim that they obtain good results with pituitrin when used to relieve the obesity of various conditions accompanied by "hypopituitarism".

Thyreoid extract, of course, serves to relieve the hypothyreoid states which so often accompany certain pituitary syndromes, and it is surely worth while to try this means of therapeusis when there are no obvious contraindications to its use.

The surgery of the pituitary region has advanced greatly in recent years, and, in the hands of surgeons qualified to perform it, has given many good results. Of necessity, the operative mortality is high, even under the best of circumstances; more especially would it seem to be so in the case of the cranio-pharyngiomata.

The indications for surgical interference are not so much the severity of the hormonal symptoms as an increase in intensity of the neighbourhood signs. Thus rapidly failing vision or intolerable headache would call for operative measures. While only the minority of tumours lend themselves to complete removal by surgical operation, a number of successful cases are now on record. The operation of sellar decompression, in which an opening is made in the bony floor of the sella, has been used with a certain degree of success. By this means, the intrasellar tumour is encouraged to extend downwards and so away from such important structures as the chiasma. The operation of subtemporal decompression is of very little use in the case of pituitary neoplasms, for even the intracranial tension often present in the final stages is rarely relieved, this being due to an internal hydrocephalus as a rule.

Deep radiation has been used with some good results, for this agent has a more or less selective destructive action upon the neoplastic cells of the adenomata. It would seem to have little effect upon other tumours of this region. Many authorities point out that it is more satisfactory to precede the use of irradiation by a sellar decompression. By this means the bad effects of any swelling of the tumour following the irradiation is minimized.

Radium has been employed with some success by certain authorities, but they point out that the danger of bone necrosis is very real, so it would seem that deep radiation is the more suitable of these two measures.

All the syndromes to which I have previously referred have been more or less well marked conditions, the result of extensive and advanced pathological changes. Surely there must be many minor degrees of the same condition and of much more frequent occurrence. The picture of a well developed acromegaly is pretty obvious, but surely milder forms exist and escape detection in the stages when perhaps treatment might prove eminently successful.

Only the other day I said to a young medical man: "My word, ——, you remind me more of acromegaly every time I see you." He took me up seriously and had his skull skiagraphed and much to our surprise he has a definitely enlarged *sella turcica*.

A few weeks ago a woman of fifty-eight years of age consulted me for "headaches" and *pruritis vulvæ*. She had heavy sugar in the urine, but in addition she had a prominent jaw with spacing of a very fine set of teeth and enlarging hands and feet.

It would be interesting to examine, say, one hundred "diabetics" for evidence of mild acromegaly. I venture to suggest that there might be some surprises. Take again the problem of obesity: how many of the sufferers from this unfortunate condition are in reality the subject of atypical or incomplete hypopituitarism? All of us know of individuals, usually girls at or near the age of puberty, who suddenly, for no apparent reason, put on several stone in weight and who seem to gain more condition when given thyreoid extract, thus disproving the presence of any hypothyreoid state. Are these mild cases of Fröhlich's syndrome in which no sexual abnormalities have occurred? After all, it is a very unusual disease in which all the classical signs are found constantly present in every case. The whole question of the temperament of the individual depends in all probability upon the endocrine balance, and, as the pituitary would seem to be the keystone of the endocrine structure, it is perhaps permissible to regard this gland as the most important factor in moulding the temperament of each of us. It is a matter of everyday knowledge that fat people are usually calm and placid, while thin people are energetic and emotionally labile; that little men are aggressive and always seeking to take the offensive, while big men are good natured and slow to strike. Is this a matter of anterior pituitary secretion? At any rate it is rather interesting to think about these problems.

Conclusion.

I have this evening attempted to summarize in the short time available the present state of our knowledge of the more important pituitary syndromes and to indicate the importance of the hypothalamic region. Whether the concept of the "neurohypophyseal mechanism", as described by Cushing, stands the test time only will tell. For the time being it will serve as a very useful hypothesis to explain many difficult problems and seeming contradictions. By many sound authorities, this region lying almost in the centre of the brain is regarded as the controlling centre for all the metabolic and non-voluntary processes of the body. It is true that some, such as respiration, may be influenced by voluntary impulses, but the majority are not under such control. Recent work has shown that both sympathetic and autonomic nerve fibres originate from this region and that here lie "head" stations for both parts of the vegetative nervous system. Furthermore, it is held that in this region reside the mechanisms by which the primary emotions are evidenced, again by means of the activities of the vegetative nervous system. Quite recently, Cushing has advanced the view that peptic ulcer depends upon some disturbance of the vegetative nervous system due to emotional factors. If this view proves to be correct, it will surely be but a matter of time before such conditions as *diabetes mellitus*, arterial hypertension, exophthalmic goitre, to name but a few, fall into the same category of diseases due to mental trauma or what was described by our predecessors as "worry" or "shock". If this proves to be the case, it will surely go to show that there is nothing new under the sun.

References.

(1) H. Cushing: "Neurohypophyseal Mechanisms from a Clinical Standpoint", *The Lancet*, July 19 and 26, 1930, pages 119 and 175.
(2) H. Cushing: "Basophil Adenomas of Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism)", *Bulletin of the Johns Hopkins Hospital*, March, 1932, page 137.
(3) W. C. Duffy: "Hypophyseal Duct of Tumours: A Report of Three Cases and a Fourth Case of Cyst of Rathke's Pouch", *Annals of Surgery*, Volume LXXII, November, 1920, page 537.
(4) M. Critchley and R. N. Ironside: "The Pituitary Adamantinomata", *Brain*, Volume XLIX, 1926, page 437.
(5) Lord Dawson of Penn: *The Lancet*, July 30, 1932, page 225.
(6) T. J. Putman, E. B. Benedict and H. M. Teel: "Studies in Acromegaly: Experimental Canine Acromegaly Produced by Injection of Anterior Lobe Pituitary Extract", *Archives of Surgery*, Volume XVIII, April, 1929, page 1708.

Reports of Cases.

INTRAMUSCULAR INJECTION OF LIVER EXTRACT.

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THE publication of this case report is prompted by an editorial article on the parenteral administration of liver extract.(1)

I.R., a female, aged forty-seven years, was admitted to the Royal Prince Alfred Hospital on September 21, 1932. She stated that she had been treated for pernicious anæmia for some years, having commenced taking liver by mouth four years ago. She had not had liver or any regular treatment for nearly twelve months prior to admission, and complained of great and increasing weakness, and on account of the predominant symptom of vomiting was unable to tolerate liver or any of its extracts by mouth. She was given a daily intramuscular injection of four cubic centimetres of "Prohepar" (kindly supplied by the Commonwealth Drug Company) from September 24 until October 13, 1932. Blood examinations were made at short intervals. A further series of four similar injections was given on October 17, 18, 19 and 20, and on October 25, 26, 27 and 28, when the patient was discharged to the out-patients' department. Without doubt she could have commenced routine oral administration earlier, but it was desired to observe the progress of the red cell count under one form of treatment. The blood count on admission and the various red cell progress counts are given as follows:

On admission—

Red blood corpuscles, per cubic millimetre	1,670,000
Hæmoglobin value	53%
Colour index	1·6
Total leucocyte count, per cubic millimetre	4,600

The film showed marked macrocytosis, poikilocytosis, anisocytosis and polychromasia.

September 29: Red blood cells, per cubic millimetre	1,800,000
October 6: Red blood cells, per cubic millimetre	2,700,000
October 22: Red blood cells per cubic millimetre	3,500,000
October 29: Red blood cells, per cubic millimetre	4,230,000

The patient's general condition and her sense of well-being improved within the first week as the vomiting subsided.

Comment.

In the ordinary routine of the hospital a patient as ill as this one was on admission would have been subjected

to blood transfusion, and that this is the best procedure is not denied. The patient then generally tolerates oral administration quite well. In the commentary quoted above undue enthusiasm in the parenteral administration of the extract is deprecated, and with this one must agree. The quotation from Musser's remarks is apt. What diabetic under insulin therapy would not welcome oral rather than hypodermic administration? It is felt, however, that the general practitioner may find a valuable accessory in a preparation such as was used in this case. It is not always possible to arrange for blood transfusion, nor is the patient always willing to do so, and if the red cell count falls below two million, it is reassuring to know that the distressing gastro-intestinal symptoms which often appear at this stage, and which interfere with ordinary methods of treatment, can be circumvented. A single case is merely suggestive and not conclusive, but the literature already contains many records of intramuscular liver therapy. In this case, however, the cost for the few weeks of necessary treatment is not excessive, and the injection is apparently painless.

One must also agree that the intravenous route is seldom, if ever, indicated.

References.

(1) THE MEDICAL JOURNAL OF AUSTRALIA, December 3, 1932, page 697.

Reviews.

MATERIA MEDICA OF PROPRIETARY PREPARATIONS.

U. B. NARAYANRAO has published the first edition of a volume practically devoted to proprietary medicines, vaccines and gland preparations.[1] It is optimistically dedicated "To Suffering Humanity, Whom the Author, His Medical Fraternity, and the Manufacturers, One and All, Try to Serve". It is stated that the present-day medical man, in addition to the drugs of the pharmacopœia and the British Pharmaceutical Codex, is faced with thousands of preparations, whose number is increasing daily. Confusion is added by the similarity of names of widely different patent preparations. Thus "Laxatin" contains *cascara sagrada*, podophyllin and other ingredients, whereas "Laxatine" is a phenolphthalein preparation. "Roboleine" is well known in Australia, but "Roboline" is totally different, containing quinine, strychnine and phosphoric acid. So also "Iodex" and "Iofex". The book contains details of the constituents of over two thousand specialities which are in daily use, arranged alphabetically. No secret remedies are given a place unless the most important ingredients are stated. Many of the preparations are not known or used in Australia. Following are some of the preparations taken at random: "Abijon" (sterile milk for non-specific protein therapy), "Analgine", "Analeptine", "Arcanol", "Calcothymin", "Cystodyne", "Enterovaccin", "Gomenol", "Grindeline", "Hormotone", "Iodalbin", "Iodazone", "Intrait of Horse Chestnut", "Kushmol", "Lantol" (containing colloidal rhodium), "Mitigal", "Mycol", "Neutralon", "Novamidon", "Ovacoide", "Phylactine", "Purostrophan", "Satyrin", "Sedobrol", "Thiohistamine", "Thioquin", "Valisan", "Yatren-Casein" and "Zymocide". Then there is an "Index of Therapeutics". The disorders are arranged alphabetically from abortion to whooping cough, and the appropriate proprietary preparations are detailed. It is humiliating to think that any practitioner requires such careful directions as to the employment of the wares of the different manufacturing firms. In the list of abbreviations "mil" is given as indicating a million, whereas "mil" is the accepted contraction of millilitre, that is to say, it is a cubic centimetre. "Syp" is given as the equivalent of syrup, whereas "syr" is more appropriate. The book contains interleaved blank pages for notes on latest preparations to keep the book up to date. The book may be of some use in indicating the composition of patented or proprietary preparations, but its publication is a sad commentary on present-day methods of prescribing.

[1] "Materia Medica of Pharmaceutical Combinations and Specialities", by U. B. Narayanrao, with introduction by G. V. Deshmukh, M.D., F.R.C.S.; 1932. Bombay: Rayan Pharmacy. Crown 8vo., pp. 292. Price: 6s. net.

MARRIAGE.

A remarkable work, "Preparation for Marriage", has been edited and practically written by Dr. Kenneth Walker, and includes amongst its contributors and advisers such well known persons as Professor Malinowski and Professor Crew, Dr. Crighton Miller, Lady Barrett, Miss Frances Huxley and Mrs. Meville Rolfe.[1]

It consisted in the first instance of essays on various aspects of the problem dealing in judicial fashion with various phases of the problem. The editor, finding that separate essays involved difficulties, rewrote the work, incorporating the information, but adding his own opinions and indicating his own outlook. The contributors included a Church of England clergyman, a physiologist, a psychologist and two anthropologists and an expert in genetics.

So useful a work would have been made still more effective if to the list there had been added a robust-minded general practitioner. The book indicates the modern tendency to modify marriage by companionate alliances and in other ways, a development apparently more widespread than has been generally understood. The author stresses the necessity for marriage if a family of full individual development is to be obtained. He agrees with the conclusions of the jurists that the family and not the individual is the unit of society.

Apparently promiscuity was and is not as prevalent in primitive peoples as has been supposed, and marriage as we know it has been chiefly adopted by them. In the course of the work the anatomy and physiology of the organs of reproduction are plainly described. The fact is recognized that over and around an animal act there has been developed most of the finer characteristics of humanity. Nevertheless in normal persons these qualities are inseparably associated with their physical origin. Asceticism on the one hand and over-indulgence on the other receive due treatment.

A chapter is devoted to an exposition of the principles of genetics and the child problem. Sterility, fertility and birth control are discussed in detail, and finally sexual aberrations are considered.

When so much information, dealt with in so sympathetic a way, has been provided, it may appear ungracious to offer criticism; criticism will, however, be inevitable since so much debatable ground is covered. Many may wish that a decisive attitude were adopted towards late marriage and premarital continence. It will be freely admitted that universal early marriage would in all probability reduce promiscuity and lessen the incidence of venereal disease. On the other hand, economic considerations make universal early marriage impossible, and early marriage would be likely to lead to more marital incompatibility and unhappiness than are found at present, and to more actions in the divorce court. Men and women, being what they are, cannot be disciplined. The right way can be pointed out to them. Those who have sufficient mental advancement will respond to the intellectual and moral appeal; some will tread the narrow path unwillingly and through fear of consequences should they leave it; the remainder will follow their inclinations.

The book as a whole contains much that is sound and wholesome and may safely be placed in the hands of those who are about to marry and who, after perusal of the book, will be better informed and probably wiser.

The work is, if anything, a little too cultivated and philosophical for the very people for whom it is intended. The Bishop of Liverpool contributes a foreword to a book which many people will read with profit.

[1] "Preparation for Marriage: A Handbook Prepared by a Special Committee on Behalf of the British Social Hygiene Council", with a foreword by The Right Rev. The Lord Bishop of Liverpool; 1932. London: Jonathan Cape. Crown 8vo., pp. 191. Price: 5s. net.

The Medical Journal of Australia

SATURDAY, JANUARY 21, 1933.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE VITAMIN CONTENT OF AUSTRALIAN AND NEW ZEALAND BUTTER.

THE amount of butter produced in the Commonwealth of Australia during the year 1929-1930 was 299,080,545 pounds. The amount of butter exported during the year was 107,663,264 pounds, and this was valued at £7,001,556. The average consumption of butter per head of population in the Commonwealth for the same year was 29·75 pounds. The consumption of butter in the United Kingdom, Canada and New Zealand is 15·4, 29·3 and 34·2 pounds per head *per annum* respectively. (These figures are taken from the "Official Year Book of the Commonwealth of Australia" for 1931.) The fat of milk contains vitamins *A* and *D* and no significant loss of these vitamins is incurred in the process of separating and churning milk fat. From the figures given for the average consumption of butter per head of population and since butter is consumed at regular intervals, its value as a vitamin food must be regarded as high.

Margaret E. F. Crawford, Edith O. V. Perry and S. S. Zilva, working at the Division of Nutrition, Lister Institute, London, have recently furnished the Medical Research Council with the results of an investigation into the vitamin content of Australian, New Zealand and English butter. The Council has issued these results as a special report.[1] It is stated in the preface that the report gives an account of investigations forming part of a scheme of research into the vitamin content of foodstuffs, particularly fruits, vegetables and dairy products, and into the effects upon vitamin content of different methods of cultivation, preparation, transport and storage. The work has been largely sustained by a grant from the Empire Marketing Board. The Medical Research Council also points out in the preface that it is known that the vitamin content of milk and butter produced in northern latitudes in winter falls below its summer level. Further, butter from the southern Dominions constitutes an increasing proportion of the supply in the United Kingdom: in 1913 some 20% of the butter imported into the United Kingdom came from the southern Dominions, in 1927 the proportion increased to 30% and in 1931 the proportion was no less than 44%.

The experimental observations of Zilva and his co-workers were made on rats. The New Zealand butter investigated included summer butter, stored summer butter, winter butter, and stored winter butter. The Australian butter included summer butter obtained during two years and stored butter. The English butter included normal, acid neutralized and sweet butter. Vitamin *A* was estimated by a method based on Steenbock's principle; for the estimation of vitamin *D* the Chick, Korenchevsky and Roscoe method was used and for the statistical examination of results Fisher's test, known as the "t" test for measuring the significance of differences of means in small samples, was employed. It was found that all samples of Australian and New Zealand butter had a vitamin *A* and *D* content closely approaching that of the best butter available from any other sources. There was no significant difference between the vitamin potencies of butter from New South Wales, Queensland and Victoria

[1] "Vitamin Content of Australian, New Zealand and English Butters", by M. E. F. Crawford, E. O. V. Perry and S. S. Zilva, Medical Research Council of the Privy Council, Special Report Series, Number 175; 1932. London: His Majesty's Stationery Office. Price: 1s. net.

respectively. The vitamin *D* content of samples of butter prepared in New Zealand during the winter of 1929 was lower than that of the corresponding summer samples. The results of the vitamin *A* tests for these samples of butter were not decisive, but they gave indication that there was no significant change due to season. The neutralization of acid creams before churning, such as is practised in Australia and New Zealand, was found to have no destructive effect upon the vitamin *A* and *D* content of the resulting butter. There was no significant loss of either vitamin *A* or *D* when butter was in cold storage for a short period (five to ten months), whether in small or large bulk or whether prepared from sweet or from sour cream. Australian and New Zealand butter, even when stored in the cold for much longer periods (one to three years) retained most of its original potency. Losses in vitamin *A* were detected only in some samples of English origin stored for nearly two years. No notable differences were found between the vitamin *A* and *D* potency of New Zealand butter from a Jersey herd and that of the butter from mixed herds in New Zealand and Australia. The breed of the dairy herd seems to have no significant influence upon the vitamin content of the butter.

The Medical Research Council finds it "gratifying" that the butter imported into England from Australia and New Zealand has a high and uniform potency in vitamin *A* and *D*. "They [butters] are equal in this respect to the best butters produced at home, and even to butter made from the milk of cows whose diet has been fortified by an artificial supply of the vitamins." This is of importance to the English people in view of the known deficiency in vitamin content, especially in vitamin *D* content, of milk and butter produced in northern latitudes in winter, when sunlight is deficient and herds are stall-fed. No suggestion is made in the report as to what the people in England should do in the matter. Three courses are open to them. They might give all their stall-fed herds an artificial supply of vitamins; they might insist on people taking vitamin in other forms when the vitamins in their butter are inadequate; they might, and this would be acceptable to Australians and New Zealanders, import and use more Australian and New Zealand butter. In Australia and New Zealand the report will be of interest from three points of view. Medical practitioners will study the findings from the physiological or scientific aspect. Those in charge of government departments concerned with export trade will see in the report material for useful propaganda, and, if they are wise, they will use it. The non-medical Press will be able to bring the findings of the report before the public, so that the members of the community who are not scientifically minded will possibly realize the economic value of research of this kind.

Current Comment.

OLEOTHORAX AND OTHER METHODS OF LUNG COLLAPSE THERAPY.

It has long been known that pulmonary tuberculosis often begins in the vicinity of the apices. In explanation, it has been asserted that such areas are relatively quiescent and afford a suitable site for the growth of the tubercle bacillus. In striking contrast to this theory is the modern method of effecting complete inactivity by pulmonary collapse. This form of treatment is applicable only when the disease is substantially unilateral and not if the other lung be extensively diseased or if the patient suffers from cardio-vascular disease, asthma, pronounced emphysema or nephritis. Severe intestinal, renal or laryngeal tuberculosis are definite contra-indications. The method may be used to perpetuate a spontaneous pneumothorax. It is especially appropriate in chronic slowly progressive unilateral disease. Cavitation may be benefited by emptying and approximation of the walls of the cavity, as also may hæmorrhage of sudden onset or recurring on a smaller scale. When cough and expectoration persist in spite of partial arrest, the use of the method is often successful.

H. M. Davies defines collapse therapy as the treatment of the lung or lung and parieties whereby the lung volume is diminished, cavities are obliterated and abnormal dilatations of the bronchi and bronchioles are reduced.[1] The lung is brought into a state of comparative rest, and there is a condition of lymph and venous blood stasis. If collapse be permanent and made complete and invariable by a fixed chest, raised diaphragmatic dome and rigid mediastinum, there is little or no fluctuation in the degree of circulatory stagnation. The results are less favourable in such cases than when some fluctuation occurs as in a partial (and, to a less extent, in a total) thoracoplasty with the diaphragm

[1] *The Lancet*, August 6, 1932.

not paralysed. Davies states that the use of oleothorax with a fixed mediastinum is less satisfactory than when the mediastinum manifests a definite respiratory pendulum swing. Some of the methods of producing collapse have the gravity of major surgical operations. Pneumothorax is the simplest. Hemidiaphragmatic paralysis is produced by phrenicectomy or phrenic evulsion and may be combined with pneumothorax. Thoracoplasty has a considerable immediate operative risk and is contraindicated when active disease exists in the other lung, except when hæmorrhage endangers life. Even then contralateral implication must be localized and and non-progressive. In extrapleural pneumolysis the lung and both layers of pleura are separated from the chest wall and collapse is maintained by extrapleural tamponage with paraffin, fat or muscle. But living tissue so introduced may disintegrate and perforation may occur into lung cavities.

Davies points out that oleothorax may be effected by paraffin with gomenol or by olive oil with gomenol—the former to replace an artificial pneumothorax, the latter in the treatment of purulent effusions. Both preparations are foreign bodies and may evoke serious reactions when introduced into the pleural cavity. With care the pleural membranes become tolerant to the oil, and the longer the membranes have been exposed to the air of a closed pneumothorax or to an effusion, and the greater the change in the membranes, the less is the liability of reaction. The oils should not, Davies declares, be introduced into a virgin pleural sac. In oleothorax the lung is influenced more by compression than by collapse. In an oleo-pneumothorax, even if the air be at a slightly negative pressure, the pressure below the surface of the oil, because of the weight of the oil, will be positive. If the oil fills the available part of the pleural sac, both the foreign body and the compression force may be prejudicial. The combination may account for the frequent perforation and pleuro-pulmonary fistula. Davies describes two types of oleothorax. One he regards as safe; the other may be attended by perforation, and the benefit is not great even in its absence. Results are good and the risks small when the mediastinum is mobile, swinging oilwards on inspiration and displaced to the healthy side on expiration. Lung perforation is likely to occur, and the results are often disappointing when the mediastinum is rigidly fixed and the lung compressed, immovable, unable to vary its volume and unable, by respiratory movements, to vary the circulation and lymph flow. Occasionally, in Davies's opinion, it is justifiable to replace a pneumothorax by an oleothorax when attendance of the patient is constantly required for refills of air and obtaining these refills is difficult; but only if the mediastinum be mobile and the pneumothorax has existed for six months. Such patients may gain greater benefit from the more constant and steady collapse of the lung by the oil. Oleothorax may be a temporary expedient to check re-expansion of a lung which is being drawn out by adhesive pleurisy. Davies is cautious: intrapleural pressure must be watched and, if the pressure of the surface oil becomes highly positive, if, as usually occurs, the mediastinum be fixed and if there be pain or discomfort, the intrapleural pressure must be lessened by withdrawal of oil.

Gomenol is distilled from *Melaleuca viridiflora*, a New Caledonian tree, allied to *Melaleuca leucadendron*, yielding oil of cajuput, and our *Melaleuca alternifolia*, from which is obtained "Ti-trol". All are powerful antiseptics. Gomenol is in considerable use, mainly in France and its possessions, by internal administration, for rhinitis, coryza, laryngitis, bronchitis, pulmonary tuberculosis and influenza. By local application it is used in 5% or 10% solution in olive oil for nasal catarrh, adenoiditis of measles and *otitis media*. After the eulogistic accounts in the literature of the efficacy of oleothorax in pulmonary tuberculosis, the article by Davies is temperate. In artificial pneumothorax, effusions may be serous or purulent, and the purulent effusions may be due to the tubercle bacillus alone or in association with other organisms. There can be no doubt that aspiration followed by injection of a 10% solution of gomenol in olive oil may prevent a reaccumulation of pus. A similar solution injected into the tuberculous bladder has met with varying success. In oleothorax the possibility of oil embolism must not be overlooked. Oleothorax with gomenol has a place in therapeutics, but claims regarding its value should not be exaggerated.

TUMOUR OF THE ISLANDS OF LANGERHANS.

THE occurrence of hypoglycæmia in association with tumour of the islands of Langerhans is of more than academic interest in that it should be possible to make a correct diagnosis and to remove the tumour. W. G. Barnard, in reporting a case of this kind,[1] points out that the blood sugar is constantly low, varying between 0·02% and 0·05%. He also adds that when the tumour has been removed and the patient has survived the operation, recovery has been complete. In the case reported by him it was impossible to persuade the patient either to allow a full clinical investigation or to submit to operation. The blood sugar level was 0·02% and after administration of glucose the patient went home of her own accord. She was subsequently readmitted in an unconscious state which rapidly passed into deep coma. Sugar was present in the urine; and in spite of the administration of insulin and glucose the patient did not regain consciousness. She died with signs of bronchopneumonia. At autopsy a tumour was found in the head of the pancreas; it measured 1·2 centimetres in diameter. The cells of the tumour were similar to cells of the islets of Langerhans. Barnard points out that most of these tumours do not metastasize for years; he would therefore call them adenomata or carcinoids.

[1] *The Journal of Pathology and Bacteriology*, November, 1932.

Abstracts from Current Medical Literature.

RADIOLOGY.

Pneumonia, Röntgenologically Considered.

A. G. SCHNACH (*Radiology*, September, 1932) discusses the basic factors entering into the development of acute lung consolidations. There is much Röntgenological evidence that pneumonia always begins with an atelectasis. Atelectasis and pneumonia have a common pathogenesis. Incomplete bronchial obstruction leads to emphysema. Complete bronchial obstruction interferes with the ventilation, circulation and drainage of the involved lung, and atelectasis and cellulitis result. The degree of cellulitis depends upon the virulence of the infecting organism and the duration of the obstruction. Lobar and lobular atelectases, with the resulting lobar and lobular pneumonia, are due to the occlusion of bronchi of different sizes by mucous exudate and bronchial mucosa œdema. Whether a lobar or lobular atelectasis and pneumonia occur depends for the most part on the type of organism in the occluding exudate. Organisms producing much œdema or thick exudate occlude larger bronchi. Type IV pneumococcus, present in the main bronchi of 80% of people, is the most common organism causing bronchial œdema and obstructing mucous exudate. Less viscid exudates, such as those produced by influenza, staphylococcus and streptococcus, cause obstruction of smaller bronchi and bronchopneumonia. Abdominal operations, regardless of the type of anæsthesia, foreign bodies and tumours, may initiate bronchial obstruction, and then absorption of the air results in atelectasis and subsequent pneumonia. The serum exudate containing antitryptic ferments, continues to cause obstruction for several days. Between the fifth and eleventh days the cellular exudate through disintegration liberates a proteolytic ferment which neutralizes the antitryptic ferments, whereupon digestion of the thick exudate suddenly releases the back pressure upon the involved lung tissue, allowing lung drainage to a greater or less degree. At this point the so-called "crisis" appears. If the blockage is maintained, abscess or gangrene may result. During the early stages of a pneumonia the Röntgenographic evidence of consolidation may be practically nil and in some cases the pneumonic exudate may be too faint to cause a definite shadow at any time during the lung involvement. But the Röntgenographic evidence of atelectasis, such as the high diaphragm, the drawing over of the heart towards the affected side, and the lessened chest volume on the affected side, all make one fairly certain that the condition is an infected atelectatic lung—a pneumonia. The indirect evidence of early pneumonia must be very carefully considered before pronouncing a chest normal. The preconsolidation period shows perhaps a slight blurring and thickening of the usual markings of the atelectatic lung, but this cannot be detected with certainty. When atelectasis sets in, the usual triangular radiation of lung markings will present a narrowing of the triangle or even a paralleling of the striations. This may give valuable information as to which lung lobe is predestined to consolidation.

Treatment of Peptic Ulcer by X Rays.

E. S. EMERY (*New England Journal of Medicine*, April 7, 1932) reports several cases of peptic ulcer treated by X rays in which definite improvement occurred after intensive medical treatment had failed. The beneficial results of treatment are attributed either to a reduction in the free hydrochloric acid present in the stomach or perhaps to relief of spasm. The number of exposures and dosage given varied somewhat in the different cases, but on an average six treatments of fifteen minutes each were given alternately through the front and back over the stomach and duodenum. The voltage used was 182 kilovolts, skin-target distance forty centimetres, current four milliampères, filter 0·5 millimetre of copper and one millimetre of aluminium. The area treated was approximately 15 by 15 centimetres. This represented 75% of a full erythema dose.

Regeneration of Bone Following Maggot Treament of Osteomyelitis.

MAURICE M. POMERANZ (*Radiology*, October, 1932) studied the X ray appearance in osteomyelitis after maggot therapy. The regeneration of bone in the diseased part is somewhat different from that which occurs in other methods of treatment. After extensive saucerization of the part, bone regeneration is slow and usually begins in the excavated area, gradually filling in the defect. This new bone is extremely dense and somewhat irregular in character. Reconstruction of a new cortex is not so characteristic as that which ensues after maggot therapy, and periosteal thickening is often extensive. The regeneration of bone following irrigation by the Carrel-Dakin method is very slow and somewhat irregular. Alternating patches of osteosclerosis and osteoporosis are common and recurrence of the infections is not infrequent. The cortical and medullary thickening may be extremely marked, and occasionally one sees linear calcification in the soft parts, probably due to irritation from the chemical, in the nature of a *myositis ossificans*. This linear calcification is extremely uncommon in osteomyelitis except in cases treated by this method. The Röntgenograms of an infected area treated by the maggot method are fairly typical, and the process may be divided into three stages. The first, an exudate stage, is noted in from seven to ten days. An osteoplastic process occurs, which begins in the medulla and extends into the soft tissues immediately overlying the part. It does not extend beyond the excavated zone. While this material approximates the density, it lacks the homogeneity of callus. Its borders are well defined and within the mass proper vacuolated areas suggest the formation of cancellous bone. After from two to four weeks, the second or contractile stage is initiated, in which contraction of the mass occurs, so that the approximate calibre of the shaft is reestablished. As it contracts it appears to become denser, until it is as dense as the bone of which it is a component part. At this stage there is no differentiation between medulla and cortex. The terminal or reconstructive stage is noted about six months after the operation. The excavated area is well rounded, and the medulla is replaced by dense eburnated bone, which may even become replaced in time by a new medullary cavity similar to that which occurs in old fractures of the shaft of long bones. After maggot treatment, healing is more rapid, and the end result approximates more closely normal bone structure than that following any of the hitherto accepted methods of treatment.

Visceral Displacement in Pneumonia.

CHING WU (*Radiology*, October, 1932) deals with the Röntgenographic findings relative to the diaphragm and mediastinum in cases of lobar pneumonia. The consolidated lung of lobar pneumonia has a higher elastic tension than normal; as a result it expands less than the normal on full inspiration. To compensate for decreased lung volume at full inspiration there is usually some visceral displacement towards the affected side. In children the mediastinum is the structure most active in compensating for decreased lung volume; in adults it is usually elevation of the diaphragm that accomplishes the compensation. In forty cases of lobar pneumonia in adults, five showed displacement of the heart and trachea towards the affected side and twenty-two showed elevation of the diaphragm on the affected side.

Hæmangioma of the Vertebra.

JAY IRELAND (*American Journal of Roentgenology*, September, 1932) reports a case of hæmangioma of the body of the first lumbar vertebra and discusses the characteristics of this case and of other reported cases. The skiagrams showed lines of increased density running the entire length of the vertebra in cephalad-caudal direction, and they were apparent in both the antero-posterior and lateral views. Between these lines of increased density were lines of de-

creased density, due to bone absorption, of approximately the same width. The size of the vertebral body was not diminished, and the bony arches and processes were not involved. The adjacent intervertebral disks appeared normal. The great majority of cases reported have been in adults, and the commonest site is in the lower thoracic and lumbar spine. Generally only one vertebra is involved, but when two adjacent vertebræ are involved, it is probable that they receive arteries from a common branch artery. The intervertebral disks are practically never involved, probably owing to the absence of blood vessels. The majority of hæmangiomata of the vertebræ give no symptoms, and some may disappear spontaneously. The outstanding symptoms of the clinical cases were a progressive weakness of the lower limbs, with or without pain, passing to a paraplegia. All patients developed a compression myelitis, but only one had kyphosis. Good results have been obtained by treatment with radium or with deep X ray therapy.

PHYSICAL THERAPY.

Electrocoagulation of the Tonsils.

L. L. DOANE (*Archives of Physical Therapy, X-Ray, Radium*, June, 1932), in discussing electrocoagulation of the tonsils, states that the diagnosis is first to be considered and is important. On this depends advice as to tonsil removal. A history of local and general symptoms should be obtained, followed by a careful examination. A general classification is made into adult and childhood types of tonsil. Safety factor is paramount in the decision as to the kind of operation. With the initiated electrocoagulation is given as the method of choice. The technique described is that in which the indifferent electrode is a sheet of metal placed between the shoulders. The author uses a localized biterminal technique, in which the pillar retractor or a ring placed around a prominent tonsil becomes the indifferent electrode. Some of the advantages are: a more perfect control, a lesser resistance and milder current, a less deep penetration of current and less reaction, less danger of injury to pillars, and greater convenience. Difficulties will be encountered, but with care and persistence they may be overcome. The pillars should be preserved, and as much of the mucous membrane in the tonsillar field as is compatible with complete removal of tonsil tissue.

X Ray Treatment of Exophthalmic Goitre.

R. SIELMANN (*Münchener Medizinische Wochenschrift*, August 12, 1932) has treated 2,000 cases of exophthalmic goitre and thyreotoxicosis with X rays without a single death and with practically no after-effects. He discusses the published causes of death, and considers that they were due to concomitant disease and not to the effect of radiotherapy. The fear of the development of myxœdema is not great. It is generally due to poor technique and, if developing, can be easily cured. His technique is as follows: a filter of 0·5 millimetre of copper *plus* one millimetre of aluminium, 150 kilovolts, 3 milliampères, 30 centimetres focal distance and a single dose of 125 *r*. In severe cases this dosage can be divided into two sittings with an interval of three to five days. A second application is made after three weeks. Three such applications comprise a course, which may be repeated three or four times with monthly intervals between each. The total dosage obtained over a period of 12 to 24 weeks is 1,125 to 1,500 *r*. During the whole period the treatment can be ambulatory. In his series, 50% of patients were cured, 45% showed improvement and only 5% remained refractory.

Malignant Tumours of the Thymus Gland.

EDWARD H. CROSBY (*The American Journal of Cancer*, May, 1932) presents a typical case of thymic lymphocytoma, in which the diagnosis was made at necropsy. The acute onset of symptoms and the rapidly fatal termination of the disease made diagnosis difficult and treatment futile. When such cases are seen early, X ray therapy offers an excellent prognosis and even the hope of complete recovery. A discussion of the clinical course of malignant tumours of the thymus and a review of the physical findings, including the typical X ray shadow, indicate that diagnosis can often be made early, and in early diagnosis and X ray treatment lies the only hope for the patient. The embryology and histology of the thymus gland are reviewed. One hundred and sixty-five cases of malignant disease of the thymus were found in the literature, which, with the case presented by the author, make a total of 166 cases. Of these, 122 were sarcomata, so-called, and 55 carcinomata. In all instances the diagnosis was confirmed by necropsy or by biopsy.

Diathermy.

H. E. STEWART (*Archives of Physical Therapy, X-Ray, Radium*, July, 1932) gives a description of diathermy dosage which he calculates by the number of milliampères divided by the square inch area of either electrode. The dose is calculated on the smaller, if the electrodes differ in size. The maximum safe current density when everything is favourable is 100 per square inch. Usually, however, the patient will tolerate 60 to 75 rather better. The author mentions several conditions in which it is advisable to reduce this current density to nearly one-half that mentioned: (i) Where the circulation is impaired as in arterio-sclerosis, endarteritis, or masses of scar tissue. (ii) Where the tissue pathway consists of a large proportion of bony tissue, as in passing the current bilaterally through ankle or knee. (iii) Where the distance between electrodes is short, as in an anterio-posterior application to the wrist. (iv) When for any reason whatever, local or general, the patient is unable to inform the operator of undue accumulation of heat. It should be kept in mind that two or three of these reasons for reducing current density may occur together. The real contraindications for the use of diathermy are only two: first, the liability of producing hæmorrhage when vasodilatation occurs and, second, the presence of free pus without drainage. In addition, it is stated that the growth of a malignant tumour would probably be stimulated by diathermy, although its analgesic effects might be needed in spite of this possibility. The average treatment is twenty to thirty minutes, taking two or three minutes to increase the current slowly to maximum and one or two minutes in its reduction.

Röntgentherapy in Schirrus of the Breast.

SOLOMON AND GILBERT (*Journal de Radiologie*, November, 1932), in studying the effects of deep X radiation on schirrous carcinoma of the breast, find that the cuirasse condition which is so often a secondary manifestation in this disease is fully radio-sensitive, and that the pustular metastatic condition of the skin arising from lymphatic neoplastic emboli is far more radio-sensitive. The atrophic type of neoplasm which is far more common, is the most favourable for irradiation, although it is considered inoperable by the surgeon. Unfortunately, the excellent results obtained are temporary only, a permanent cure being exceptional.

The X Ray Treatment of Chronic Mastitis and Certain Leuchæmias.

RUSSELL REYNOLDS (*Proceedings of the Royal Society of Medicine*, May, 1932) offers an explanation of the success of X irradiation in cases of chronic mastitis by supposing that a condition of mild hyperæmia is caused with increased flow of lymph; that is, the lymph vessels dilate, rendering the flow of lymph freer. This, he thinks, relieves the lymph stasis which is the chief factor in causing proliferation of the epithelial lining of the acini and ducts, the pre-cancerous state. Secondly, he discusses the X ray treatment of certain leuchæmias. He has eighteen years' experience in the work and, with others, acknowledges that X rays are palliative only. He states that the danger lies in letting the red cell count and hæmoglobin content drift below normal, and he emphasizes that blood counts cannot be done too frequently during and after treatment.

Special Articles on Treatment.

(Contributed by request.)

II.

THE TREATMENT OF ASTHMA.

THE correct treatment of asthma necessitates an exact diagnosis.

Assuming that a diagnosis of true bronchial asthma has been made and that causes such as mediastinal glands, or neoplasm, aneurysm, heart failure and renal disease have been excluded, the treatment resolves itself into an endeavour to prevent or diminish the asthmatic paroxysm, by any means.

Treatment of the Attack.

In the first place one must try to relieve the urgent symptoms. In the early stages of the complaint 0·01 to 0·03 gramme (one-sixth to one-half a grain) of ephedrine sulphate or hydrochloride by mouth will often relieve an attack. Similarly 0·18 to 0·6 mil (three to ten minims) of adrenaline chloride solution given by hypodermic injection may be effective. Hurst recommends that in a prolonged or very severe attack, adrenaline should be given, 0·06 mil (one minim) every half minute until relief is noted. As a rule the more frequently these preparations are used the less effective they are in controlling the attack; and incidentally it should be remembered that these are potent drugs, and may have immediate or subsequent deleterious effects. Eventually they may lose their effect in relieving the attack. An adrenaline or ephedrine habit is to be avoided, though it is a less serious one than the morphine habit. Morphine should be given only as a last resort.

Atrophine sulphate injected hypodermically (0·4 to 0·8 milligramme or one-one hundred and fiftieth to one-seventy-fifth of a grain) gives relief sometimes, but rarely.

Smoking asthma cigarettes or burning asthma powders containing stramonium leaves and saltpetre often gives relief and may continue to do so for many years. It is well to suggest their use if attacks recur. It is wise to make sure that the bowels act by giving castor oil or calomel if the cause is doubtful.

Many patients find relief for themselves by taking aspirin, phenazone, strong coffee, whisky and so on.

Nasal sprays containing adrenaline or ephedrine are sometimes effective in relieving mild attacks of asthma, but not usually when hay fever occurs also.

In all cases an attempt should be made to ascertain the previous immediate treatment, in case idiosyncrasy exists to one of the above mentioned drugs; aspirin, especially, may produce profound respiratory depression.

When the attack has been relieved, it is always worth while trying the effect of the well-known lobelia or stramonium and potassium iodide mixtures as follows:

R—

Potassii iodi, 0·3 to 1·2 gramme (5 to 20 grains).
Tincturæ lobeliæ ætheris, 1·0 mil (15 minims).
Spiritus ammoniæ aromatici 1·2 mils (20 minims).
Aquam ad 30·0 mils (half an ounce).

Thirty mils or half an ounce to be taken in water three times a day.

The dose of potassium iodide may be increased.

Diet.—The urgent symptoms being relieved, the patient should be seriously cautioned about his diet.

Most asthmatic subjects know that a full stomach, especially at night time, means trouble, and attention to the digestion by appropriate diet and exercise, as well as regulation of the bowels, is of great importance. A simple alkaline rhubarb mixture may help greatly in this respect, but mainly the patient must learn what he cannot eat with impunity and avoid it. This is quite apart from any specific dietetic cause. The patient must eat easily digestible food, and not overload the stomach at any time. The evening meal should be light and the patient should not go to bed for two to four hours afterwards. Excessive meat, pies, pastries, stews, lobster, pork and so on are effective in producing an attack of asthma in some patients, quite apart from any specific sensitiveness.

Prevention.

The prevention of asthma depends largely on the discovery of its cause; if satisfactory proof has been obtained of this, the necessary steps are fairly obvious.

Assuming that the possible causes (apart from hereditary causes) are: (i) contact with certain animals or birds, (ii) contact with the pollens of grasses, flowers, trees or weeds, (iii) the ingestion of certain foods, (iv) infection by bacteria and (v) nervous causes, then the following treatment is advised.

Animals.—When asthma has been proved to occur on contact with animals such as the horse or cat, or the fur or skin of animals, avoidance of these animals and their skins or hair is the best treatment. Desensitization by injection of graduated doses of the supposed causative protein is to be undertaken with great caution.

Pollens.—To avoid a particular pollen is by no means easy, since pollens travel many miles and have been found in the air, by aeroplane investigation, at 5,000 feet, in considerable numbers.

The common sense course is to try to get rid of all such pollen from the house, garden or immediate surroundings, and if the pollen is very abundant to try to keep it out of the house as much as possible by closing doors and windows. However, this often does not prevent attacks, and has obvious disadvantages. Ointments have been prepared for applying to the nasal mucosa, and it has even been advised that the nose should be blocked or plugged with an ointment of this kind, but this has caused additional distress in patients known to myself. In any case, pure pollen asthma of the kind described by American authors appears to be rare in this country.

If the asthma persists, a change of residence for a time, admission to hospital or a sea voyage may be necessary. It is to be remembered that these measures are not certain to afford relief, and the patient should not be subjected to expense and inconvenience without careful consideration.

It has been said that there is no asthma above 4,000 to 5,000 feet altitude. It would be very interesting to have Australian experiences on this point; one could scarcely recommend removal to Kosciusko as a method of treatment at present, but there are air pilots in Sydney who are anxious to take patients into the higher atmosphere to test this theory.

Desensitization may be undertaken as a last resort. It should be borne in mind that the condition may be aggravated by injudicious treatment of this kind.

Foods.—Asthma due to foods such as eggs, wheat, oats *et cetera*, is treated by avoidance of the food cause. When the evidence is quite definite that a particular food induces the attack, an attempt may be made to increase tolerance by the ingestion of gradually increasing amounts of the food.

Dust.—Asthma due to dust has been widely recognized. Specific dust causes, such as flour, kapok *et cetera*, are comparatively rare; the only treatment is to avoid the particular dust. House dust, said to owe its potency to certain moulds, has recently been the subject of much discussion. The dust of sheep yards also is often mentioned as a cause, but the patients seldom react to sheep wool or dander. Even if a specific element of these dusts appears to be associated with the attacks, great care is advisable before attempting desensitization. Fatalities have occurred and the condition has sometimes been aggravated by such treatment. Avoidance of the dust cause is the soundest and safest method of prevention.

Bacteria.—Asthma due to bacterial causes forms a large class, especially in children, the attacks are often due to recurring coryza and subsequent tracheitis or bronchitis. A swab of the naso-pharyngeal secretion should be taken during the acute coryza to isolate the causative organism. A vaccine should be prepared and administered in

increasing doses to endeavour to prevent the recurring coryza. In those cases in which infected adenoids or tonsils occur, they should be removed; if muco-pus still appears in the naso-pharynx, as it often does, nasal douching daily or twice daily, with an alkaline lotion, is necessary and may have to be kept up for months. In these cases an examination of the muco-pus may reveal a pathogenic organism and vaccine treatment may help the patient, especially if the patient is a child.

When infection of the antra is proved, the antra must be treated by drainage or otherwise, until the infection is got rid of. The asthma may not cease as a result of surgical treatment of naso-pharyngeal or antral infection, but such treatment obviously gives the best chance of recovery. When chronic bronchitis or bronchiectasis exists along with asthma, as it frequently does, treatment should be aimed at those conditions, by removal of infected foci, hospitalization, rest, postural drainage, change of climate and so on. Naturally any other coexisting disease must receive appropriate treatment.

Special Methods of Treatment.

If the simpler methods have failed, recourse may be had to non-specific methods of treatment. Of these the intravenous injection of peptone is the easiest to carry out and, at times, reasonably effective; but before this is done a change of residence or temporary admission to hospital should be strongly advised. Prolonged asthma often subsides at once when this is done.

For peptone treatment there are several well-known preparations, the doses of which are now fairly standardized. To begin with, a small dose of peptone, about 0·3 mil (five minims) is injected slowly into one of the veins about the antecubital fossa. This dose is increased by 0·18 to 0·3 mil (three to five minims) at each injection, until 1·5 mils (twenty-five minims) is given at a dose. The injection is repeated every five or seven days. In some cases a reaction may result within twenty-four hours, with malaise, headache, fever or shivering, but it is rarely severe. Aspirin or phenacetin usually gives relief. As a rule from five to ten intravenous injections are given in a course.

Another method is to give injections into the veins at weekly intervals up to 1·5 mils (twenty-five minims) and then reduce the dose a few minims each week until the original commencing dose is reached.

There are several modifications of this method of treatment. Auto-hæmotherapy has been advocated and practised with some success in the treatment of allergic conditions, including asthma. In this method five to ten cubic centimetres of blood are withdrawn from the patient's vein and immediately injected into the buttock muscles; local pain may be experienced, but general reactions are rare; five or six injections are given at weekly intervals.

X ray treatment applied over the bronchial glands gives relief in some intractible cases of asthma, whether directly or by suggestion is uncertain. Similarly the use of violet rays to the nose, mouth and body has been advised by Auld.

Change of Climate or Residence.—Many patients are free from asthma in the dry inland districts, others are relieved at the seaside. Before advising any drastic changes involving perhaps livelihood or leaving home, an attempt should be made to remove possible causes of the animal, pollen or dust variety from his environment, and the patient should spend a few days or weeks, if possible, in the situation to which the move is proposed, because the asthma often recurs in the new situation.

The Nervous Element.—The nervous element may be a potent one; some patients can reproduce or simulate an attack at will. This is to be borne in mind when compensation for the disability is allowed.

It is usually best for the patient to try to continue his occupation whenever possible, unless the occupation has been definitely proved to be harmful. A week or two away from the usual environment occasionally, may enable the patient to carry on satisfactorily for years.

It will be noted that patients often improve with any new treatment and also that they may improve when they change their doctor or go to a hospital for the first time. The possible effect of suggestion in these cases, as in all cures of asthma, must be borne in mind.

When asthma persists, in spite of treatment, it is most important to examine the patient again fully from the beginning, as to the mode of onset, subsequent history, frequency of attacks, environment, occupation and so on, for a clue to the cause or causes. In this way some point may be noted which has been regarded superficially in a previous examination, which may open up an avenue for successful treatment.

In conclusion, in every case of asthma the daily life should be reviewed, and treatment or advice should be directed to diet, hours of meals, exercise, the bowels, amount of fresh air and every factor which could conceivably influence the condition.

There is no disorder in which it is more difficult to decide which treatment or hazard brought about a cure or relief.

G. C. WILLCOCKS, M.B. (Sydney), F.R.C.P. (London),
Honorary Physician, Sydney Hospital; Honorary Assistant Physician, Royal Alexandra Hospital for Children, Sydney.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Anatomy Lecture Theatre at the University of Adelaide on October 17, 1932, Dr. St. J. Poole, the President, in the chair.

Pituitary Gland and Its Syndromes.

DR. F. H. BEARE read a paper entitled: "The Pituitary Gland and Its Syndromes" (see page 85).

DR. G. LENDON opened the discussion on Dr. Beare's paper by thanking him for his complete and systematic review of the pituitary syndromes. He raised the question of the result of total removal of the pituitary body both experimentally and during surgical procedures and mentioned that Cushing believed that this removal was incompatible with life, but that other American experience, especially that of Dandy, encouraged the opposite belief. Until this point was settled, substitution therapy would continue to interest surgeons as well as physicians. Simmonds, of Hamburg, had described in 1914 a case of cachexia and death due to complete pituitary destruction, and later in 1918 reported three similar cases. With regard to Fröhlich's syndrome and its causation, although Fröhlich's original two cases were found by Erdheim to leave a suprasellar cyst, Dr. Lendon did not agree with Dr. Beare's contention that the majority of examples of Fröhlich's syndrome had a similar pathological basis; surely, seeing how few came to the *post mortem* room, encephalitis and embolism were more likely causes. He was interested to note that acromegaly had been produced by experimental injection of dogs. The earlier experiments in this direction had produced gigantism, but not acromegaly, and he would like to ask Dr. Beare if this was due to the fact that the rat's epiphyses never closed whilst those of the dog did.

DR. F. M. WILCOX said that he had listened with great interest to the paper and desired to add his thanks to Dr. Beare for the way he had presented this difficult subject. Having some years ago conducted many experiments extending over several years into the subject matter of the internal secretions, especially those associated with the female genital organs, Dr. Wilcox found that removal of the ovaries told back in time on the adrenals, thyreoid and pituitary—forming as it were a chain of interdependence—and each in turn putting forth a special effort to compensate or to function vicariously when one or other had been damaged or ablated. With the removal of the ovaries there was increase in size of the adrenals and thyreoid

and with the additional removal of these the pituitary increased, especially the *pars intermedia* and the colloid secretion in the posterior lobe. It was interesting to hear that the conclusions then reached, namely, that the pituitary was the president or master composite gland in the central nervous system combining and capable more or less of taking on the functions of all the other endocrine body glands, was still twenty years later the views of the latest investigators.

Reference had been made to the fact that ablation or damage from new growth *et cetera* of the pituitary was followed by more severe and rapidly fatal symptoms in the adult than in early life; and it might be that this was explained, partially at any rate, by the effect of the thymic hormone which was gradualy withdrawn from the economy, as the gonads approached the functioning stage. Henderson, working in Edinburgh (1911) on calves, had pointed out that the removal of the thymus was followed by sexual precocity and rapid and excessive development of the gonads and, conversely, early castration delayed the involution of the thymus. In regard to obesity (endogenous) and the special forms attributed to the dysfunction of the pituitary, it would seem probable that no one cause could be ascribed for over growth of the fatty tissues, the constant factor in most cases being lessened basal metabolism.

It had been suggested that all endocrine disturbances were probably pituitary in origin. From the experiments referred to by Dr. Wilcox it would appear that the converse might reasonably be postulated, namely, that any endocrine disturbance or glandular dysfunction as of thyreoids, thymus, adrenals or the gonads, told back upon the pituitary, relying on it to supply and make up to the bodily economy by extra action or vicarious function that which had been withheld. It was, as it were, the last line of support. In the matter of therapeusis, in conditions exhibiting the pituitary syndrome, there was to his mind no reason why extracts should not be commercially supplied from the anterior lobe equalling in efficiency those already used from the posterior pituitary; but no product produced or extracted by artificial means could approach the naturally produced hormones.

The subject was one of overwhelming interest and Dr. Beare was to be congratulated most heartily on his paper.

The Delbet Plaster Splint.

DR. A. BRITTEN JONES showed a patient suffering from an abduction fracture of the ankle to illustrate the use of a Delbet plaster splint.

The patient, a woman aged forty-five years, and weighing eighty-nine kilograms (one hundred and ninety-six pounds) in falling from a stool on September 1, 1932, sustained a fracture of the fibula 2·5 centimetres (one inch) above the external malleolus with backward displacement of the lower fragment. The fracture was reduced four hours after the accident under a general anæsthetic, and a Delbet plaster splint was applied. On the following day (September 2) the patient was allowed to hang her legs over the side of the bed and was instructed to move her ankle and knee joints. On September 3 the patient stood and, grasping his (Dr. Britten Jones's) hands for support, walked a few yards. On September 4 the patient walked using two sticks.

A fresh plaster was applied on September 8 (a week after the accident) on account of the first Delbet splint becoming loose, owing to the lessening of the œdema about the ankle. On September 9 the patient walked with the aid of one stick. On September 14 (two weeks after the accident) the patient walked without support and was discharged from hospital. Three days later she performed her usual household duties, and had continued to do so since then. A third Delbet splint was applied on September 28 (four weeks after the injury). It was now about eight weeks since the accident and the patient had good ankle movements and walked without a limp.

X ray films were shown demonstrating the fracture before and after reduction and its appearance three weeks later.

PORTRAIT OF DR. C. H. MOLLISON.

THE friends and admirers of Dr. C. H. Mollison met at the Medical Society Hall, East Melbourne, on December 15, 1932, to do him honour. Most of those present were members of the Victorian Branch of the British Medical Association. Dr. Mollison has for many years served the Victorian Branch and the Medical Society of Victoria with untiring devotion. He has earned the gratitude of medical practitioners throughout the State and has endeared himself to very many. The suggestion made a few months ago that his portrait should be painted, was received with enthusiasm. Mr. W. B. McInnes was commissioned to paint the portrait in oils and it was presented to the Branch at the gathering on December 15.

In opening the proceedings, the President of the Branch, DR. W. G. D. UPJOHN, said that the esteem in which Dr. Mollison was held was indicated by the presence of so large a number of members and friends, and also by numerous subscribers to the portrait fund. The trust which Dr. Mollison enjoyed was indicated by his re-election for more than thirty consecutive years as Honorary Treasurer of the Victorian Branch of the British Medical Association and of the Medical Society of Victoria.

DR. R. H. FETHERSTON, in presenting the portrait to the Branch on behalf of the subscribers, said that no one had done more work than Dr. Mollison, or given up more time in the interests of the medical profession in Victoria. For more than thirty-five years he had been the Honorary Treasurer of the Medical Society of Victoria, and, since its amalgamation with the Victorian Branch of the British Medical Association about twenty years ago, he had been Honorary Treasurer of the combined body. Dr. Fetherston expressed appreciation of the work of Mr. McInnes, and, on behalf of the subscribers, formally presented the portrait to the Branch.

PROFESSOR W. A. OSBORNE supported Dr. Fetherston's remarks, particularly on behalf of the Medical School of the University of Melbourne, where Dr. Mollison had been lecturer on medical jurisprudence for many years.

In accepting the portrait on behalf of the Branch and of the Medical Society of Victoria, Dr. Upjohn said that Dr. Mollison's long service as Government Pathologist, Lecturer on Medical Jurisprudence, Treasurer of the Branch and of the Society, President of the Medico-Legal Society, and, lastly, the fact that he had combined physical with mental attributes by being a champion at royal tennis, had rendered him worthy of the highest honour and of the most sincere esteem of his colleagues.

In reply, Dr. Mollison feelingly thanked the subscribers and members for the honour which they had done him.

The portrait will be hung in the Medical Society Hall with those of Dr. Mollison's old friends, the late George Adlington Syme, the late Thomas Fitzgerald, and others. A replica will be painted and presented to Mrs. Mollison.

Correspondence.

AN INTERESTING EYE CONDITION.

SIR: In view of the recent article by C. H. Usher in *The British Journal of Ophthalmology* (November, 1932), the following case may be of interest.

On November 29, 1932, Miss G.M., aged nine years, came to me complaining of headaches and tiredness of eyes. Vision right and left was $^6/_6$. On examination the right eye showed a curious discoloration of the sclera in the form of a collar around the limbus; it was of a dull slaty-blue colour and not continuous, but open nasally and temporally. The proximal edge was some two millimetres from the limbus and the collar varied in depth from four to eight millimetres. Conjunctival vessels running over this dark patch were movable and somewhat enlarged. There was no nystagmus. Pupils reacted normally and tension was normal. The colour of hair, eye-brows and eye-lashes was dark brown. Irises of a light green colour;

the mother's eyes were also green though somewhat darker, and the father's were said to be blue.

The fundi were essentially normal, the right being richer in pigment than the left. There was no history of consanguinity in the parents. This child was the middle one of three, and the others were said not to be affected similarly, but as a matter of fact the mother had not noticed the condition in this child until I pointed it out to her; it is not, therefore, possible to say in this case whether the condition was congenital, progressive or stationary.

The urine unfortunately was not tested and it is therefore impossible to say whether the condition is related to that known as ochronosis with alkaptonuria.

There seems to be no doubt that this case can be included amongst those cited by Usher, and serves to bear out his contention that the condition may exist without any harm to the visual acuity or the eye in general; it throws no light, however, on the doubtful ætiology. I propose to reexamine the case at intervals to see if it progresses or remains stationary and shall make a point of having the urine examined on the next occasion.

Hoping that you will find this of sufficient interest for publication.

Yours etc.,

DOUGLAS R. GAWLER.

Chennell House,
260, St. George's Terrace,
Perth, Western Australia,
December 6, 1932.

TRAVELLING FEES CHARGED BY MEDICAL PRACTITIONERS.

THE following letter is published at the request of the Medical Secretary of the New South Wales Branch of the British Medical Association.

[COPY.]

Graziers' Association of New South Wales,
66 Pitt Street, Sydney,
25 August, 1932.

The Secretary,
British Medical Association, New South Wales Branch,
Macquarie Street, Sydney.

Dear Sir:

Complaints are still being made to this Association by its members that travelling fees charged by medical practitioners are too high.

This matter was brought to your attention on a previous occasion, when you pointed out that the British Medical Association did not regulate fees.

It appears, however, that there are certain fees which it is customary for the medical profession to charge, and it is thought that some action, either by way of publicity or otherwise, should be taken to modify existing customs so that fees will be reduced to a standard in keeping with the general marked decline in the purchasing power of the community, a decline which has already been recognized by other professions (*e.g.*, the legal profession).

Whilst it may be the earnest desire of medical men not to inflict hardship upon individuals who, through force of circumstances, cannot afford the customary fees, it is thought that the medical man is not necessarily in a position to know whether his patients can afford to pay such fees or not, and there are many patients enjoying some degree of social status who would rather pay the customary charges with difficulty than attempt to drive a bargain with their doctor.

These representations are not made on behalf of persons who in normal times would be numbered among the poorer classes, but on behalf of landholders who, whilst they still live in an environment accorded during years of prosperity are, many of them, heavily mortgaged, and are unable to realise any profit from the produce which they market, and are likely to be called upon to cope with drought conditions in the near future.

This Association is not in a position to bring to the notice of each individual doctor reasons why existing travelling charges are considered onerous. It is desired to know whether any action can be taken to bring this matter to the notice of practitioners through the columns of your Association's journal.

Yours faithfully,

(Sgd.) J. W. ALLEN,
General Secretary.

ANÆSTHESIA FROM THE GENERAL PRACTITIONER'S POINT OF VIEW.

SIR: Dr. Mark C. Lidwill, in his article, "Anæsthesia from the General Practitioner's Point of View", says, regarding ethylene: "It is not a drug to be used by the general practitioner, unless he has been trained in its use and has given a large quantity of anæsthetics"; and again in his summary: "Ethylene is probably the safest of all anæsthetics, but is not suitable for general practice."

As one of the general practitioners addressed, I am puzzled to know how ethylene can be regarded as the "safest of all anæsthetics" when it is a drug to be used only by an expert, in whose hands any anæsthetic drug should be used with a maximum of safety. Ether is used, under all sorts of conditions, by men with very little training and, in emergencies, sometimes by nurses without any training at all.

A colleague, whose mother unfortunately died under ethylene (administered by an expert), searched through the coroner's records in Melbourne; and found, to his surprise, that many deaths were associated with ethylene administration, although they had not been recorded as anæsthetic deaths.

Dr. Lidwill suggests that some, at least, of the popularity of ethylene is due to the zeal of the manufacturers. I am anxious to know whether the opinion that it is the "safest of all anæsthetics" is based on any reliable experimental work.

Yours, etc.,

December 28, 1932. "GENERAL PRACTITIONER."

AN ECONOMIC COMMENTARY AND DIAGNOSIS.

SIR: I was pleased to see the Doctors Trinca and Dane take the part of Dr. De Garis for her suggested taking up some thought of the socio-economic position. The present depression is immensely medical not only in the actual effects: those of poverty on the physical, and mental uneasiness on the psychical; but also in its preventing the potential enlargement of a socio-economic state conducive to healthier living than yet we have even thought of. Surely the bearable and the unbearable suffering is a disease caused by the depression, which is not inevitable, but humanly engineered. The death certificates of this disease are labelled "suicides", which have increased 300% to 500% during the past decade.

The leader in *The Times*, London, November 3, 1932, states definitely that the professional economic experts have failed to get us out of the impasse, and *The Times* believes that the solution will only be arrived at by thinkers outside these experts who are not prejudiced by preconceived theories. For those doctors who wish to review present economics and suggested remedies, free of the perils of loose thinking, might I suggest perusal of "This Unemployment: Opportunity or Disaster", by Rev. V. A. Demant, B.Litt., B.Sc. (London); and "The People's Rights", by the Rev. J. S. Roach, Queensland. These excellent expositions are the works of two clergymen of the Church of England.

Yours, etc.,

20, Queen Street, Melbourne. THEO. DE SIEM.
December 29, 1932.

Obituary.

PATRICK BLACKALL.

WE regret to announce the death of Dr. Patrick Blackall, which took place on December 8, 1932, at Canberra, F.C.T.

Corrigendum.

DR. G. L. LAWSON has kindly drawn attention to an inaccuracy on page 769 in the issue of December 24, 1932. The figure 0·49 gramme (three-quarters of a grain), under the heading "Regional Anæsthesia", should be 0·049 gramme.

Books Received.

ADAMSON OF WESLEY: THE STORY OF A GREAT HEAD-MASTER, Edited by Felix Meyer; 1932. Melbourne: Robertson and Mullens, Limited. Demy 8vo., pp. 226, with illustrations. Price: 10s. net.

DISEASES OF OLD AGE, by F. M. Lipscomb, M.R.C.P.; 1932. London: Baillière, Tindall and Cox. Crown 8vo., pp. 474. Price: 12s. 6d. net.

MASSAGE AND REMEDIAL EXERCISES IN MEDICAL AND SURGICAL CONDITIONS, by N. M. Tidy; 1932. Bristol: John Wright and Sons, Limited. Demy 8vo., pp. 441, with illustrations. Price: 15s. net.

Diary for the Month.

JAN. 25.—Victorian Branch, B.M.A.: Council.
FEB. 1.—Western Australian Branch, B.M.A.: Council.
FEB. 1.—Victorian Branch, B.M.A.: Branch; Presentation of Annual Balance Sheets.
FEB. 2.—South Australian Branch, B.M.A.: Council.
FEB. 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.
FEB. 14.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 21.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 22.—Victorian Branch, B.M.A.: Council.
FEB. 23.—South Australian Branch, B.M.A.: Branch.
FEB. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 1.—Western Australian Branch, B.M.A.: Council.
MAR. 1.—Victorian Branch, B.M.A.: Branch.
MAR. 3.—South Australian Branch, B.M.A.: Council.
MAR. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 7.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 15.—Western Australian Branch, B.M.A.: Branch.
MAR. 15.—Victorian Branch, B.M.A.: Clinical Meeting.
MAR. 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 22.—Victorian Branch, B.M.A.: Council.
MAR. 28.—New South Wales Branch, B.M.A.: Council (quarterly).
MAR. 30.—South Australian Branch, B.M.A.: Branch.
MAR. 30.—New South Wales Branch, B.M.A.: Annual Meeting.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", page xvi.

AUSTIN HOSPITAL FOR CHRONIC DISEASES, HEIDELBERG, VICTORIA: Junior Resident Medical Officer.

BRISBANE MATER CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND: House Physician, House Surgeon, Honorary Anæsthetist.

CAMOOWEAL HOSPITAL, QUEENSLAND: Full-time Medical Officer.

CHILDREN'S HOSPITAL, INCORPORATED, PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.

DISTRICT HOSPITAL, KALGOORLIE, WESTERN AUSTRALIA: Resident Medical Officer.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officer (male).

NEWCASTLE HOSPITAL, NEWCASTLE, NEW SOUTH WALES: Junior Resident Medical Officer.

THE HORNSBY AND DISTRICT HOSPITAL, NEW SOUTH WALES: Honorary Medical Staff.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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